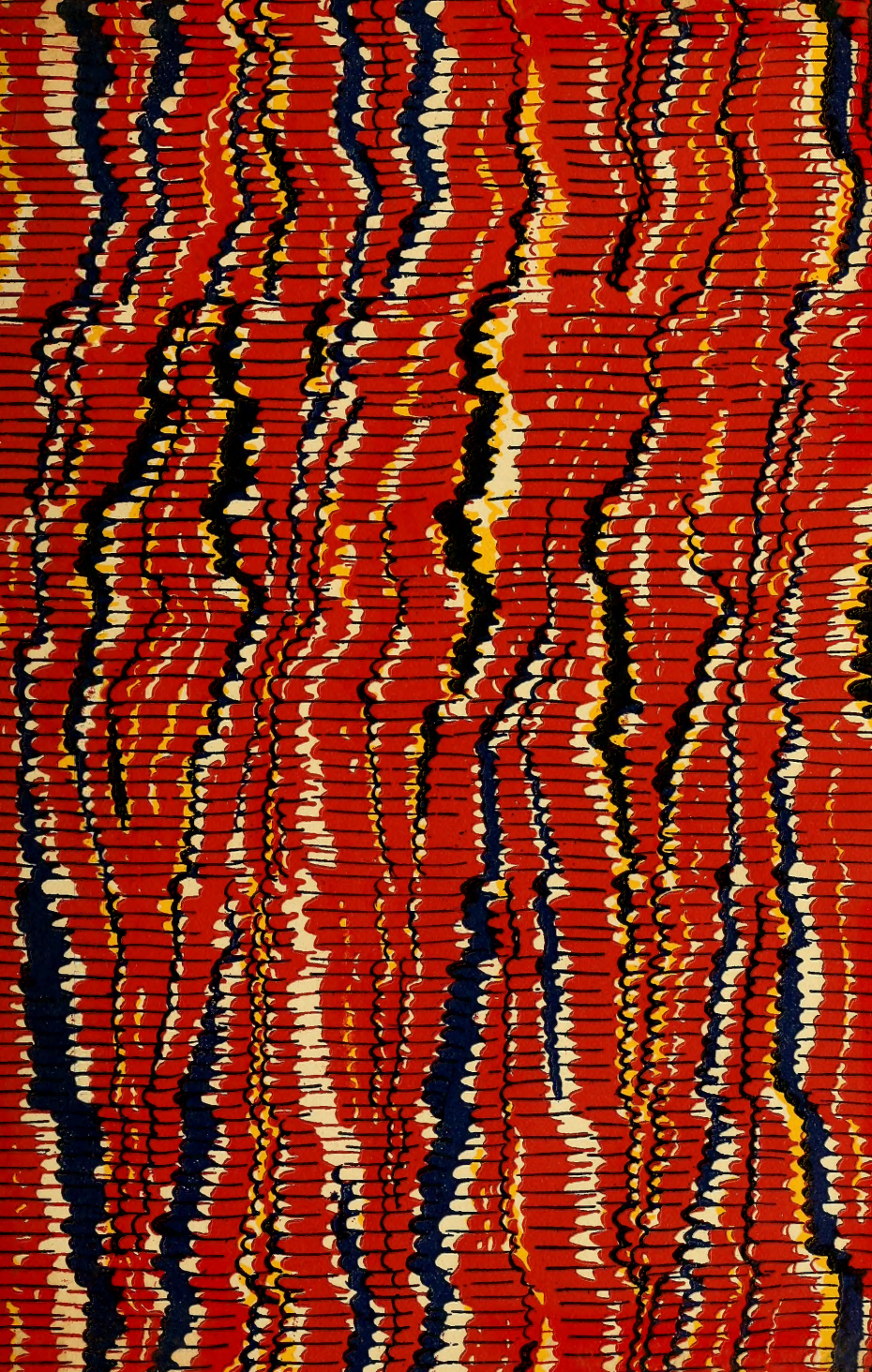


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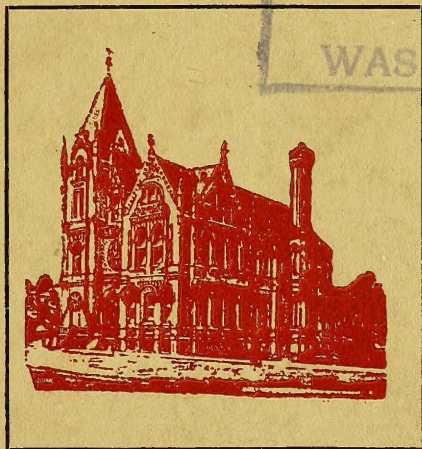
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JOURNAL AND PROCEEDINGS
OF THE
Hamilton Association

For the Cultivation of Science, Literature and Art.

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SESSIONS 1911-12.

NUMBER XXVII.

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President 1911-12

Journal and Proceedings
OF THE
Hamilton Association

FOR SESSIONS OF 1911-1912

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1908—Lyman Lee, B.A., J. Gadsby, A. H. Baker, J. M. Williams, Rev. W. Delos Smith.

1909—T. H. Wingham, B.A.Sc., B. O. Hooper, Rev. W. Delos Smith, J. F. Harper, E. S. Hogarth, A. H. Baker.

1910—B. O. Hooper, F. C. Grist, T. H. Wingham, B.A., A. H. Baker, E. S. Hogarth, E. G. Overholt.

Annual Meeting, Thursday Evening, May 26th, 1910

Lyman Lee, B.A., President, presiding.

Present—The Executive officers and an audience numbering some 75.

The minutes of previous meeting and the previous annual meeting were read and confirmed.

The following were duly elected members of the Hamilton Association: Rosalynde Fuller Osborne, Ross Wilson, W. G. E. Boyd, A. E. Alexander, Professor Ernest Haeckel, Jena, Germany.

It was then moved by H. B. Witton, Esq., and seconded by Mr. T. F. Best, That, whereas, Professor Haeckel has honored this Association by seeking membership therein, and whereas the scientific attainments of the learned gentleman are universally recognized, that this Association mark its appreciation by electing Professor Haeckel an Honorary Member, the Council having so recommended.

Mr. H. B. Witton addressed the meeting in support of the resolution, which was unanimously carried.

The following resolution was then presented: The Council of the Hamilton Association, by resolution duly passed at an Executive meeting held on the 14th day of May, 1910, respectfully recommend that this Association, at Annual Meeting assembled, that in view of the distinguished services rendered in the respective branches of literature, science and art, and the many services rendered this Association for so many years, that this Association give expression to its deep sense of obligation and appreciation by electing the following gentlemen Honorary Members: Hon. Adam Brown, H. B. Witton, Esq., and A. Alexander, F. S. Si.

It was then moved by Mr. T. H. Smith, and seconded by Joseph Kneeshaw, that the resolution receive the unanimous endorsement of the meeting.

Several gentlemen spoke in support of the resolution, which was carried unanimously by a standing vote.

Mr. Witton replied in a very happy and appreciative address.

The following resolution of condolence to the widow and family of the late A. T. Neill, Past President, was then duly moved, on motion of Dr. S. A. Morgan and J. M. Robinson:

Whereas, it has pleased the All Wise Ruler of the Universe to remove from our midst that most gifted citizen, our esteemed fellow labourer and Ex-President, Andrew T. Neill, and

Whereas our Association is thus deprived of the counsel and service of one whose wisdom and judgment, whose noble character and cultured powers were, for over a quarter of a century, devoted to the promotion of the welfare of the Association, and to the social and intellectual uplifting of our city.

Resolved, that we do hereby record our grateful acknowledgment of his many services performed in the various branches of this Association on behalf of those sciences to the study of which his energies were so earnestly devoted; and our deep realization of the loss that his sudden removal will prove to the members of this Association, and to our whole city.

Resolved, further, that we express our deep sympathy with his afflicted family, coupled with an earnest hope that a Higher Power may comfort and sustain them in their hour of bitter trial.

The election of officers was then proceeded with, and resulted as follows:—

Hon. Presidents—Adam Brown, A. Alexander and H. B. Witton.

President—Lyman Lee, B.A.

First Vice-President—G. Parry Jenkins, F.R.A.S.

Second Vice-President—J. F. Ballard.

Corresponding Secretary—W. H. Child, Ph.B., M.A.

Curator—Col. C. C. Grant.

Treasurer—P. L. Scriven.

Recording Secretary—Jas. Gadsby.

Executive Council—T. H. Wingham, B.A.; E. S. Hogarth, B.A.; B. O. Hooper, A. H. Baker, F. C. Grist, E. G. Overholt.

Mr. H. B. Witton then presented the following address, entitled *Stories and Story Tellers*:—

STORIES AND STORY-TELLERS.

By H. B. Witton, Sr.

Read before the Hamilton Association, May 26th, 1910.

A tale, or story, is a little narrative or history. It may be true or imaginary, in prose or in verse, and being less elaborate than a novel, may be written or oral. Of unwritten stories—*Maerchen*—the brothers Grimm collected more than two hundred in Europe; and the word *folklore*, coined by W. J. Thoms, has served as the heading of a chapter containing many hundred such stories. East and west, north and south, all peoples, civilized and semi-savage, have their stories. Joseph Jacobs, who speaks with authority on the subject, says the “tell-me-a-story” instinct is as universal as any craving of mankind. He wonders that somebody has not defined man as a tale-telling animal, with the corollary of woman as a tale-bearing one. A cursory glance at a few groups of the numberless stories current in the world, with a passing reference here and there to some special tale, may be interesting.

If not the oldest collection of famous stories, that of the *Arabian Nights* for many years, in the western part of the world at least, has had most readers. The Arabic version of these tales took nearly its present shape somewhere in Egypt, likely at Cairo, in the fifteenth century. A num-

ber of the stories are older than that date; and some of them have been traced back to Egyptian, old Persian, Indian, and to Grecian sources. But inasmuch as one of the oldest Arabic versions refers to coffee, and to cannon, the Arabic text used by Galland for his French translation of 1703-17 could not be older than 1450. It was Galland's version which first made the Thousand and One Nights known in Europe.

The best English translations of these tales are those respectively by Lane, in 1840; by Payne, in 1882-4; and by Burton, in 1885-8. Lane omitted all stories he found uninteresting and all he deemed objectionable. The edition by Payne, and that by Burton, were both privately printed. Burton's version is complete. It includes about two hundred and fifty main stories, which, with the secondary stories these unfold, make a total of about four hundred tales. A score of these show traces of a Jewish origin; and one writer of note argues that the framework of the whole group is based on the Old Testament book of Esther.

The deft setting of the Arabian Nights, however, suggests their Indian kinship. The first minister of an eastern sultan could find no consort for his sovereign, who had cruelly put to death sundry former queens. The minister's elder daughter, knowing her father's perplexity, much against his will insisted on being herself proffered in marriage. Accepted by the sultan, the young queen, who from a thousand books had learned the stories of past generations, made the sultan forget his cruelty by telling him for a thousand and one nights these stories. The tales all told and the queen become mother of three sons, she found herself beloved by the regenerate sultan; and with him and the people of his empire lived happily till visited by Death, "the terminator of delights and separator of companions."

The charm of the Arabian Nights is their lifelike portrayal of eastern manners. And that charm is enhanced by an admixture of supernatural occurrences, thrown into the narrative under the exact light requisite to impress the

memory. Sindbad the Sailor and his Old Man of the Sea, the roc, the valley of diamonds, Ali Baba and the forty thieves with their treasure cave and its "open sesame"—these with scores of similar characters and incidents, found in the stories of these Nights, leave on the reader's mind more lasting impressions than are made by the happenings of actual life.

Many Indian stories owe their origin to Buddhism. To the Buddhist "Karma" solved the problem of good and evil in the world. To him past, present and future were links in the one chain of existence; and he was confident his proclivities to good and evil were the result of good and bad actions done in a former life. But, for the Buddhist, remembrance of anterior existence is only in the ratio of spiritual enlightenment. Of former births the common mortal had next to no recollection; while a Buddha could recall all vicissitudes he experienced in every stage of his former lives. Hence the Buddhist canon contains a "Jataka," or book of birth stories, relating in detail incidents from the anterior lives of Buddha. There are in all five hundred and fifty of these stories, which scholars say are at least as old as a council held three hundred and seventy-seven years before Christ. Prof. Fausboll, of Copenhagen, lately edited the Pali text of these stories, and an English translation in six volumes was finished under the supervision of Prof. Cowell, of Cambridge, in 1902, just before his death.

These birth stories are a mine of folk-lore. Volume 3 of Prof. Lanman's Oriental Series contains much information concerning them. Among others—birth story 189—The Ass and the Lion Skin—that in various forms has spread the world over, is given there in a full translation by the late H. C. Warren. The Jataka telling how the King of Benares and the King of Kosala met in a defile too narrow for both to proceed, gives a glimpse of Buddhist ethics. The chariot drivers decided that the right of way should be given to the most virtuous of the two kings, and

for the King of Kosala it was claimed "he overthrows the strong by strength, the mild by mildness; good he overcomes with good, and evil with evil." The driver for the King of Benares replied: "If these are your master's virtues, what are his faults? As to my master: With meekness he conquers anger, overcomes evil with good, disarms avarice with liberality, and the liar with truth." The story, of course, ends: "The King of Benares was Buddha in an anterior existence."

Eastern countries are the home of stories. The instruction and amusement spread in the west by essays and dramas Oriental nations diffuse by means of tales and fables. Persia has always been noted for its didactic tales, love stories and humorous fables. I give the skeleton outline of one by Nizami. It is of the twelfth century, and was a favorite of Sir William Jones, who labeled it "Taciturnity." When the rose blossomed in the bower, a nightingale thus accosted a hawk: How is it that thou who since thou hast drawn breath hast never uttered one pleasant word to a soul, art the king's favorite, and art fed on the best of food, whilst I, who in the twinkling of an eye can charm with a hundred notes of song, must eat worms, and live in a house of thorns? Go to, quoth the hawk; I serve the king on the hunting field, hence my luck, and since thou art nought but tongue, eat thy worms, sit on thorns, and peace be with thee."

If we may trust tradition, the hand of time has much shortened the list of Indian stories. Still, the numbers left almost exceed credence, for stories of all kinds find congenial soil and flourish in most of the many tongues of India. There plenteous harvests, in all ages, have supplied a garner of tales, having all grades of ethical and artistic merit, from the purest, most attractive and spiritual, to those repulsively coarse and inane. Hindu epic poetry is noted for the pretty tales like that of Nala, scattered along the tortuous pathway of its main narratives. Sir Edwin Arnold delighted his readers some years since with a few

of these, in verse, which still retains its charm; and the great gatherings of Indian tales and fables are as attractive to-day as they were centuries ago. Of these, three collections claim special mention. The Katha-sarit-sagara, or ocean stream of fable, which is the largest; the Panchatantra, the pentateuch of fables, which is the oldest; and the Hitopadesa, the book of friendly advice, which is the collection best known to English readers.

The Katha-sarit-sagara was compiled in the latter half of the eleventh century by Somadeva of Kashmir. Some of its stories show traces of Buddhist origin, though the compiler was a Brahmin, who wrote to please Queen Suryavati, a patroness of Brahmins, and who filled his stories with miracles done by Brahmin ascetics through virtue of their sanctity. He was seized with the fancy that his book should be the receptacle of all stories, as the ocean is of all rivers; hence its quaint name, "Ocean of Story Streams." And, in fact, if not boundless as it was meant to be, it runs to the intolerable length of six-score chapters, nearly double the length of the Iliad and Odyssey put together. Dr. Brockhaus issued the collection in Sanskrit text and German translation, or summary, in 1889. H. H. Wilson, also as far back as 1824, gave an analysis of its early chapters in the Calcutta magazine; and an English translation by C. H. Tawney was published in 1880 by the Asiatic Society.

Both the Panchatantra and Hitopadesa are chiefly apologues—that is, fables in which dumb beasts have been made to talk and act like men, to enforce some moral truth. The aim of both books is the same, namely, tuition of that branch of social ethics called by the Hindus "Niti," or the rules of good conduct, with a special reference to the deportment of princes. The Panchatantra, the larger book of the two, contains more than eighty fables, while the Hitopadesa has but forty-three, half of which, or more, are taken from the larger book. It is also of later date, and its

stories are arranged in different order and in more condensed form than those of the Panchatantra.

Two points concerning these fables are worth mention: their migrations, and their service in directing anew men's attention to the forgotten treasures of Indian learning. The Bible and one or two other works excepted, no other books have had so widespread a circulation as these Indian fable books. They have been translated into Pehlevi (the speech of ancient Persia), into Arabic, Greek, Hebrew, Latin, Spanish, Italian, English, French—in a word, into all the chief living vernacular tongues of the western world, and those of India and the east. The history of Indian fables is itself a fairy tale. Parts of the story have been told by Horace Hayman Wilson, Lancereau, Muller and Lanman, And whoever may care to read the whole story can find it complete in Benfey's introduction to his version of the Panchatantra, a volume of six hundred and odd pages. Benfey's book is an invaluable contribution to the history of fiction, to be thankfully read, albeit of the type George Eliot called "A monument of German skill, with all the builders' scaffolding left standing after the structure is finished." Jacobs says that Benfey traced each tale in its wanderings with an amount of erudition which is phenomenal even in the land of erudition.

A score of English translations, more or less entire, give versions of these fables. That known as the fables—or a part of the fables—of Bidpay, Pilpay, or the moral philosophy of Doni, variant titles of the same book, was made by Sir Thomas North as far back as 1569-70. Like his translation of Amyots' Plutarch, used by Shakespeare, it is lucid, vigorous, and holds the reader with that forceful spell peculiar to Elizabethan prose. Of the Hitopadesa there are full English translations by Wilkins, Sir William Jones, Johnson, Sir Edwin Arnold, and by Max Muller. The Hitopadesa was the first Indian text printed in Nagari characters. Colebrooke wrote an introduction describing its history. It was printed at Serampore by Carey, the whilom

shoemaker, and workman in an indigo factory, who became a famous orientalist. The translation by Wilkins forms a volume of Morley's Library, and can be bought for a shilling.

Versions of the *Hitopadesa* vary as to their number of fables, and have minor variant readings of the same fable. One piquant fable found in many languages, given in Knatchbull's version from the Arabic, in skeleton reads thus: "A man fleeing from a mad elephant fell into a pit. In falling he grabbed the twigs of a tree growing by the pit-side and his feet rested on something part of the way down. Holding on to the tree, and with a foothold, he thought himself safe, when to his horror he saw two rats, one black, the other white, gnawing the root of the tree he was clinging to. At the pit bottom he saw a dragon, with open jaws, and that his feet were resting on the heads of four serpents. But looking up, he saw a hive of bees in the tree above him, from which honey was slowly dropping; and eager to catch the drops of honey slowly trickling from the tree, on a sudden elephant, rats, dragon and serpents were all forgotten." The key to this is not hard to find. The fleeing man represents the human race; the elephant, death; the pit, the world; the black and white rats night and day, gnawing away the tree of life; the serpents the four constituent elements of the body; the dragon the close of earthly life; and the trickling honey represents the pleasures of life which make all horrors forgotten.

It is a moot question whether, as to age and influence, Indian or Grecian fable literature deserves precedence. But that is of little import, for both literatures are rich in story-lore that fades away till lost in mists of the remote past. Apart from the Homeric stories, which their epic form excludes from this list, the best known Grecian fables are those attributed to *Esop*. Altogether, a list of two hundred and thirty sparkling fables bear his name, though the popular English series includes but the one hundred

and fifty taken from Dodsley and others, familiar to all from Bewick's admirable wood-cuts. Criticism has done its best to throw a mythical haze over the names of both Homer and Esop. Still, good work postulates a good workman, and good stories a good story-teller, so the palm for fables long since was given to Esop.

The story that Esop was a dark-skinned hunchbacked buffoon may be taken as a legend; and possibly we must, though regretfully, read as fiction Lander's "conversation," sketching from a few lines in Herodotus, as only Lander could sketch, his perfect picture of Esop's worth and Rhodopi's beauty when they lived as fellow-slaves together in the house of Jadmon, Esop's master. But if much must be given up, this much remains: such a man as Esop, of Phrygian birth, lived about six centuries before Christ; that around his name Grecian folk-stories clustered which Socrates in prison began to put into verse, that Pliny makes reference to him, and that in the third century of the Christian era, one Babrius made a collection of the fables then ascribed to him.

In the story-telling branch of imaginative literature, as in other spheres of human activity, the Greeks attained high excellence. What they did was not only good in itself, but became the cause of excellence in others. Longus wrote in the sixth century the pretty story of Daphnis and Chloe; and in due course had scores of imitators who wrote pastoral poetry in all parts of Europe. A thousand years afterwards that story was faintly reflected in the "Gentle Shepherd" of Allan Ramsay, as it had been earlier in Fletcher's "Faithful Shepherdess," and in parts of Milton's "Comus." None better knew than the Greeks did the art of teaching abstract truths by fables and by representing to the mind material things. Plato wishing to show the proneness of all men to error, pictures a cave whose inmates from childhood are chained, and can see nothing but shadows thrown by light from above on the wall in front of them. The cave is the world, the chained men its inhabit-

ants; and the shadows are illusions mistaken for realities. And wishing to show the admixture of good and evil in the heart of man, he says the soul is a chariot, having a driver and two winged horses. In a divinity horses and driver are absolutely good; other souls are but partly good, and for them one of the horses is good and one is vicious.

Another classical story-teller of note was Lucian. Of Syrian birth, he became a Greek rhetorician. He well knew the world of his day. And after journeying professionally in Egypt, Asia Minor, Macedonia, Greece, Italy and Gaul, he settled in Greece to turn his wit and acquirements to account in righting what seemed out of joint in the life of his times. He lived in the days of the Antonines, when Graeco-Roman life was at its best. It was the golden age Gibbons said he would have chosen to live in, had his advent in the world been matter for choice. But for all that, it was a period of unrest and of transition. Among other changes, the polytheistic religion itself was declining, and from a century of Christian teaching, and from other causes, shrines at which the multitude had at least formally bowed were becoming deserted. Lucian, however, attacked what he deemed the false mythology and philosophy of his age with his own weapons and on a battlefield of his own choice. His favorite weapon was satire, and his blade was so well made and tempered, and was so skilfully wielded, that the strokes and rust of centuries have scarcely impaired its form or blunted its edge.

His work has come down to us as dialogues, as narratives made up of realistic incidents, and as old legends and strange fictions. Many of the dialogues are in reality tales, with now and again a question by a listener, to serve as excuse for a new paragraph, or give point to the story. His "True History," a bit of fabulous satire aimed at contemporary writers of history, beggars imitation. Swift's "Gulliver," and Raspe's "Munchausen" are fair offshoots of the Lucian genus, though lacking the exuberant vim of the parent stock. The naive opening of the story is

inimitable. Lucian says: "I see no reason to give up my right to inventive freedom; and as I have no truth to tell, I fall back on falsehood, and now make the only true statement you may look for: that I am a liar. This may save me from imputations. I narrate what I have neither seen nor experienced, nor have ever been told; what neither exists nor could exist; and therefore humbly ask my reader's incredulity."

One of Lucian's tabooed stories in its Latin version by Apuleius contains an episode—Cupid and Psyche—that is one of the prettiest stories known. La Fontaine, and nearly all the great fabulists, give it in variant versions. It is cause for regret that so charming a story should ever have had questionable surroundings. But as the old tale runs, though a jewel be set in lead, the fault is in the setter, not in the gem, which shines on without loss of lustre. Poets, painters, sculptors and philosophers have striven to immortalize this beautiful story. Many of these efforts have won world-wide admiration; and nowhere has it come nearer to its own than in the version by William Morris.

Nearly forty years since Morris introduced his *Earthly Paradise*, containing twenty-four of the world's great stories in verse, two for each month of the year, in these lines:

"Of Heaven or Hell I have no power to sing;
I cannot ease the burden of your fears,
Or make quick-coming death a little thing,
Or bring again the pleasures of past years;
Nor for my words shall ye forget your tears,
Or hope again for aught that I can say,
The idle singer of an empty day."

But Morris—poet, artist and story-teller—was no idler. He has been called the Chaucer of the nineteenth century. Like his prototype, Chaucer, he told well the stories of many lands; and he told none better than those not so far afield, that were and are the delight of our Norse kinsfolk.

Norseman was the name formerly given to all who lived on the northeastern coast of the North sea. Their settlements included the countries now known as Norway, Sweden and Denmark, with their neighboring islands; and Iceland, that strange, volcanic island of the North Atlantic. They were seafaring, vigorous people, who sometimes made themselves unfavorably known to their British neighbors. How near akin the two people were by blood relationship is not known. But their intimacy is known, from Norse settlements on some parts of the British islands, and by the fact that antique monuments and runic inscriptions of the same kind, are found on both shores of the North sea. That intimacy left marked and indelible traces in British history. Two lines of English kings were of Norse ancestry; and three of our week-days still bear the names of deities belonging to the Norse pantheon.

When, long ago, in the ninth century, Harold Hair-fair laid claim to be sole King of Norway, there were brave men who fought against that claim, and who, worsted in the fight, fled to Iceland, where some of their descendants still live. To their new home they carried in their memory stories from the land of their birth, which in speech and substance are deemed trustworthy relics of our remote, rude Teutonic ancestors. Among the most interesting of these tales is a collection called *Heimskringla*, the round world, or stories of the Kings of Norway. Samuel Laing some years since gave in English the Danish version of this book; and William Morris and Magnusson more recently translated it into English from the Icelandic.

Some *Heimskringla* stories go back to heathen times, and others to the times when the Norse folk were turning from heathendom to Christianity. The skeleton of a story of the latter class pictures that time of repellant cruelty: "King Olaf, Christian in name but heathen in heart, fought with Raud the Strong and conquered him. Raud, who lived on an island of the firth in Hvalogaland, was a

heathen and withal a wizard, who at will could raise wind to sail whither he pleased. So some time after the battle, Olaf went with his folk, who took Raud, killed his guards, and carried him bound before the king, who urged him to become a Christian. Raud in blasphemous words refused to be baptized, when the king in wrath said Raud should die the worst of deaths. So, in the words of the saga: They took a hollow stalk of angelica, or, as some say, the king's horn, and set it in the mouth of Raud. Therein they laid a ling-worm, and laid a glowing iron to the outwards thereof, so that the worm crawled into the mouth of him; and there came Raud to his end."

These Norse stories were written in Iceland by Snorri Sturluson, early in the thirteenth century. They were taken down on that far-off island near the verge of the great north polar basin, just as they fell from the lips of aged men, half heathen and half Christian, so that, strange as the stories are, the circumstances of their origin are equally weird.

In the latter half of the century in which Snorri Sturluson collected sagas from the Norse folk, Bishop Jacobus Voragine, on the shores of the Mediterranean, brought together materials for his "Golden Legend." A guide to the ecclesiastical year, explaining the festivals of Christendom, the Bishop's work was also a hagiology of nearly two hundred worthies of the Christian church. Voragine laid under contribution everything he thought would give point or charm to his book. From the canonical scriptures, the Lives of the Fathers, by Jerome and by Eusebius, to profane histories and oral traditions, neither fact nor legend was discarded. The result is, the *Legenda Aurea* contains lives time cannot despoil of their simple grace, like that of Mary of Egypt; legends that will always please, like those of the boyhood of Moses and of the sleeping fishes of St. Brandon; and passages which excite surprise, like that closing the curious account of St. Gangolfus in chapter two hundred and one, which could hardly

be where it is by choice of the bishop, but must be an interpolation of later date from some old fabliau.

Voragine was provincial of the Dominicans for Lombardy; though, later on, Bishop Canis, a Spanish Dominican, was a severe critic of these legends. Some of them, he said, must have been written by "one having a hard face, dull heart, and an ill-balanced mind that mistook monstrosities for miracles." Still, from the first the book became the most highly prized hagiology of the medieval church, and during the first half century of printing more than seventy issues were sent forth by one and another of the early printers. Caxton printed two, if not three, editions. He used for his first edition a part already turned into English, a French version, and, when necessary, the Latin text. It was the largest book Caxton printed. Besides a large frontispiece, it had seventy woodcuts. He bequeathed fifteen copies to the Church of St. Margaret, Westminster. Of the first edition there are a number of imperfect copies, but no perfect copy of that edition is known to exist. Morris reprinted the Golden Legend of Caxton at the Kelmseott press in 1892; and a low-priced edition of the same book was published in seven volumes of the Temple Classics by Dent & Co. in 1900. The Finding of the Holy Rood, recorded in the sixty-fourth chapter of Voragine's book is one of the most beautiful and best-known of the Golden Legends. A cognate version older than the one given by Voragine is amongst the earliest English prose treasured in the Bodleian library at Oxford.

The middle ages, the intervening period between ancient and modern times, in its full extent reaches from the death of Constantine to the capture of Constantinople by the Turks, nearly a thousand years; or in a narrower sense is restricted to the time between the sixth and thirteenth centuries. During the longer period, the learning Greek and Latin literature conserved suffered a partial eclipse; and for a portion of the shorter period the eclipse was well-nigh total. In the fifth century Rome was sacked

by Alarie, and Constantinople was scourged with wars, fire and earthquakes. Some schools of learning were kept up by bishops and abbots in the sixth century; though the next hundred years has been called the nadir of European intelligence. Still, in the eighth century a new spirit brooded over the stagnant waters, some of the Romance languages were taking divergent fixed forms from Latin speech, and the sons of St. Benedict were getting ready to share some few treasures of the old learning they had conserved at Monte Cassino:

War, bigotry and the tooth of time have made full depiherment of medieval life hopeless; though modern research teaches that it was not so dark as it formerly was thought to be. Still it was a decadent period of history, in which the great branches of learning languished. Even the art of story-telling suffered with the rest; though that minor exhibition of mental activity by no means fell into desuetude. Many a fossil lies hidden in the rocks, and many a legend was submerged in the debris of the middle ages. Nevertheless the list left includes endless collections of stories, cyclic legends, fabliaux, romances and popular tales. Among these is the collection often mentioned, if little read, called *The Gesta Romanorum*.

The title is somewhat a misnomer, for they are Roman deeds more in name than in reality, being snatches of stories of all kinds, and from all countries. Some claim them to be of English origin, from stories concerning the bishopric of Ely; and because one of the stories gives German names to some animals, they are claimed to be German. But in truth they are from a thousand sources, and grew up in many lands; and both collector and home are conjectural.

Of the hundred and eighty stories of the *Gesta* some are pointless, dull and gross; though others are bright, amusing, and worthy of their world-wide fame. Each tale, however rude, in allegorical fashion though sometimes strained, is made to impress on the reader some religious

doctrine or precept. How far afield some of these stories wandered is shown in the history of that called in this collection "Temporal Tribulation," which is the mythical history of Apollonius, Prince of Tyre. That story, said to be altogether fabulous, originated with a Greek pagan author of the third century. It found its way into Latin prose of the fifth century, and into the Latin verse of Godfrey and Viterbo in the twelfth century; and thence into the "Gesta Romanorum." That in turn gave rise to a French version, whence came the English "Apolyne of Tyre," printed by Wynkin de Worde in 1510. Gower, about 1300, used the same story in his "Confessio Amantio," itself containing a hundred stories, and thence it was taken to form the doubtful Shakespeare play, "Pericles of Tyre."

Among the world's greatest stories are the Troy books, relating to the destruction of Troy. Of these, Homer's Iliad has long had place as the greatest and best. But as the Iliad includes only fifty-one days in the tenth year of the war, auxiliary stories abound, forming a cycle with particulars as to the whole war, its origin, results, and participants in the strife. The names of such books alone would fill a volume. One of these nearest to us in time and in interest is Caxton's "Recuyell of the Histories of Troy." It was the first book printed in English with movable types, led to the establishment of printing in England, is invaluable as a specimen of English prose, was the motive for Shakespeare's play of Troilus and Cressida; and for these reasons will always be precious in the eyes of lovers of English literature.

Caxton drifted into authorship and printing. The English guilds by charter obtained the right to control the working of a commercial treaty between Burgundy and England. Caxton became governor of their company, and lived in Flanders. The treaty lapsed in 1465, and Caxton as Royal Commissioner failed to get it renewed in the lifetime of Duke Phillip. But Phillip died in 1467, when Charles the Bold became Duke, and took for his second

wife Margaret, sister of Edward IV., King of England. Soon after, the treaty was renewed. Meanwhile Raoul Lefevre, chaplain and secretary to Duke Phillip, had gathered from many sources his Troy legends, and at request of Duchess Margaret, Caxton began to translate them into English. After translating five or six quires, Caxton, dissatisfied with his work, thrust it aside,, intending not to renew it. But Margaret sent for him, read what he had done, suggested amendments, and desired him to finish his translation. This he did, commencing the work at Bruges, continuing it at Ghent, and finishing at Cologne two of the three parts into which Lefevre's book was divided. As the third part was included in the Troy book of his friend, John Lydgate, monk of Bury, Caxton thought not to translate it; but in part from the fact that Lydgate's book was in rhyme, and more from the urgency of Duchess Margaret that his prose translation should be finished, he completed his task.

At the close of this notable story-book Caxton wrote: "Thus end I this book, translated after my author as nigh as God has given me ounning. And forasmuch as in the writing of the same my pen is worn, mine hand weary and not steadfast, and mine eyes dimmed with overmuch looking at white paper, and that age creepeth on me daily; and as I have promised to address to my friends as hastily as I might this book, I have practiced and learned at my great charge and dispense to ordain this said book in print, after the manner and form as ye may here see." But Caxton lived to print in England a hundred volumes after this, in all 18,000 pages, of which a fourth were translated or written by himself.

One of the works printed by Caxton was the *Morte Darthur*, Sir Thomas Malory's book of King Arthur and his knights of the round table. It contained "Our land's first legends, love and knightly deeds, and wondrous Merlin and his wandering King." They are tales of that knighthood which was an element of the medieval life developed by the

feudal system. Knight in its various meanings gives a clue to the history of knighthood. The word meant successively, boy, servant, soldier and mounted warrior to do battle for king or noble. Installation of a knight in the olden time was a notable pageant. After ceremonial ablutions, the novice was clad in raiment of three different colors. The white was an emblem of purity, the red that he would shed his blood for the faith, and the black that he would fight to the death. After fasting twenty-four hours, he spent in the church a night of prayer. In the morning, after confession, he went to mass, heard a discourse on the duties of knighthood, and approaching the altar with his sword hanging from his neck, the sword was taken by the priest, blessed, and returned. Then kneeling and declaring that his desire to become a knight was prompted by no selfish motive, his application was granted. After being clad in his armor, he knelt and was dubbed a knight, receiving from the dignitary conferring the honor three strokes on the shoulder, who at the same time said: "In the name of God, and of St. Michael and St. George, I make thee a knight. Be thou brave, bold and loyal." The new-made knight then arose, and the helmet being placed on his head, he sprang on his horse, and, flourishing his sword, with his horse prancing along, he went to the castle where he was looked for.

Such was the twelfth century knight, and Malory's knights are near akin to him. The Arthurian battles were fought, however, before that date, in the days when Celt and Saxon were in a maelstrom of strife, and before heathendom in Britain had given up the fight against Christianity. But these legends reached the court of the Plantagenet kings through the medium of Breton "conteurs" and Cymric bards, and if in transmission they did take the color of a later age, they are none the less interesting, as art and literature of every age abound in anachronisms.

It has been said that Malory's book is "a most pleasant jumble and summary of the legends about Arthur."

Still, it is more than that; for it is written in lucid English; and the last meeting of the Queen and Lancelot, when both enter on a new life of penitence, good works and faith, to atone so far as they can for their unhallowed love, is drawn with the hand of a master. And where can we find a truer pathos than in these words of lamentation over the dead Sir Lancelot, by his brother: "And now, I dare say, thou Sir Lancelot, there thou liest, that thou were never matched of earthly knight's hands; and thou were the courtliest knight that ever bare shield; and thou were the truest friend to thy lover that ever bestrode a horse; and thou were the truest lover, of a sinful man, that ever loved woman; and thou were the kindest man that ever strake with sword; and thou were the goodliest person ever came among press of knights; and thou were the meekest man and the gentlest that ever ate in hall among ladies; and thou were the sternest knight to thy mortal foe that ever put spear in the rest."

Malory's version of these legends is not the only one we have, nor is it disparagement of him to say that, excellent as that version is, it is no longer the best. The *Idylls of the King*, sent forth by Tennyson fifty years ago, bear evidence of the new light that has fallen on the world in the four intervening centuries since the *Morte Darthur* was written; and show that English speech, if not more forceful, has gained in compass and in melody. Gifted with rare knowledge, mastery of the mother tongue, keenness to analyze motives and test them by the highest ideals; in a word, gifted with a poet's genius, Tennyson in the fullness of his powers devoted them to the work of telling anew these mythical stories of our national life. The verdict of his successful labor was long since recorded, and time is not likely to reverse the judgment. The favorites of the Table round are all portrayed; from Merlin, who by the legend was more than a figurative son of Belial, to King Arthur himself. Sir Galahad and his quest of the Holy Grail; Elaine; Enid, singing "Turn, Fortune, Turn

Thy Wheel," all are delineated. The last interview between Arthur and Guinevere is worthy of both story and story-teller; and the passing of Arthur, though well known, compels quotation. The King, addressing Bedivere, says:—

"I have lived my life, and that which I have done
May He within Himself make pure! But thou,
If thou shouldst never see my face again,
Pray for my soul. More things are wrought by prayer
Than this world dreams of. Wherefore let thy voice
Rise like a fountain for me night and day.
For what are men better than sheep or goats
That nourish a blind life within the brain,
If, knowing God, they lift not hands of prayer
Both for themselves and those who call them friend?
For so the whole round earth is every way
Bound by gold chains about the feet of God."

And thus passed Arthur the king,

"To where beyond these voices there is peace."

But change is inseparable from mundane affairs, and a change came over Europe at the close of the middle ages. That is a vague period sometimes dated at about 1453, the year in which Constantinople was stormed by the Turks. Such an event, however, is but a convenient reckoning point, as transitions of the Renaissance were neither simultaneous throughout Europe, nor were they sudden. The dawn had long been breaking. Like the slow, unceasing alteration in a living being, if hardly perceptible, the change was nevertheless organic, not to be prevented, and increasing. The term "renaissance," in a restricted sense, sometimes denotes the revival of classical learning in Europe. And this, though by no means the only change the name implies, was one of importance. Pope Nicholas V. before 1455 gathered into the Vatican library five thousand manuscripts, and is said to have been engaged on a translation of Homer in his last illness. Petrarch and his

friends, also with ardent zeal, sought out written copies of classical authors; and although Petrarch himself never mastered Greek, he took keen pleasure in aiding his learned friends to make Greek literature again known in Italy. The newly-found-out art of printing gave them timely aid, and Politian and Erasmus gave scholarly help to the early printers. To the great printers, Aldus, Estienne, Elziver and Froben, whose families for three and four generations at Venice, Paris, Leyden and Basle devoted their learning, skill and wealth to collecting manuscripts and spreading printed cheap first editions of Greek and Latin authors, learning owes a limitless debt of gratitude.

In the early days of the Renaissance there was a crumbling away of feudalism, changes in the relationship betwixt church and state; and higher esteem for the vernacular languages of the people. For centuries Latin was the dominant European tongue. In the days of Elizabeth, Bacon put his chief books into Latin; and Montaigne would have done so with his essays, had he not deemed them written only "for a few people and a few years." In the time of the Commonwealth Milton wrote state papers in Latin; and in the Hungarian parliament Latin till 1825 was the language of debate. Still, by the close of the fourteenth century seven vernacular languages contained works that were the first fruits of seven modern European literatures. Of such works France is given credit for the most, and Italy for the best. After examining fourteen Italian dialects, Dante made choice of that of Florence for his *Divina Commedia*, which was not made public till after the poet's death, and which at once took rank as the greatest work up to that time written in the speech of the people.

During the fourteenth century many stories were written in sundry vernacular tongues of European peoples. The *Decameron* of Boccaccio and the *Canterbury Tales* of Chaucer are two of the more notable collections. Boccaccio wrote several books, but his vivacious stories threw

his other writings into shadow. His tales have this setting: When the plague was raging in Florence in 1348, ten friends, women and men, met daily; and to mitigate dread of the pest, ten stories a day were told by them for ten days, making in all a hundred stories. Hence the name, Decameron, given to the book. Boccaccio introduces his stories with an account of the plague, which for vivid description has often been favorably compared with accounts by Thucydides and Lucretius of an earlier pest at Athens, and with that of the great plague at London, by Defoe. He also wrote poetry, which, after reading the sonnets by his friend Petrarch, he would have burnt but for intervention of friends. Still, though Dante and Petrarch surpassed him as writers of vernacular poetry, his prose stories were unrivaled in his day, and for ages have had imitators and admirers.

Boccaccio was a skilful delineator of character. His tales, through not the earliest specimen of vernacular prose, were written with a grace, tenderness and flexibility of idiom his countrymen unanimously declare was so entirely new as to entitle him to the name of endearment they have given him, namely, "The father of Italian prose." As to his place in literature, Landor concludes his profound study of Boccaccio in these words: "In the vivacity and versatility of imagination, in the narrative, in the descriptive, in the playful, in the pathetic, the world never saw his equal, until the sunrise of our Shakespeare. Ariosto and Spenser may stand at no great distance from him in the shadowy and unsubstantial; but multitude man was utterly unknown to them. The human heart through all its foldings vibrates to Boccaccio."

The first edition of Boccaccio's stories was printed by Valdarfer in 1471. It is one of the rare books of the world. The only perfect copy known is that in the John Rylands library, Manchester. It was sold in 1812 to the marquis of Blandford for two thousand two hundred and sixty pounds sterling.

Chaucer, though nearly thirty years younger than Boccaccio, for several years was his contemporary. Chaucer's versatility and varied occupations made him conversant with all sorts and conditions of men. By turns he was page, soldier, diplomat, customs controller, clerk of works for the king and chief forester. Of his scholastic education little is known, though his knowledge of Latin, French and Italian was abreast of the scholarship of that day. Great changes were taking place in the speech of the English people during his lifetime, which ran from 1340 to 1400. In the struggle between the English and French languages, English was gaining the mastery. During Chaucer's life it was made lawful by statute for English pleadings to be made in courts of law; and parliament was opened with an English speech. Rolle, the Hampole hermit, wrote sundry treatises in English; Trevisa translated into English Higden's Chronicle; and a bible translation into English was finished before Chaucer's death. These are some of the origins of modern English, of which it has been said: "Its foundations are Saxon, and its graces French."

Chaucer helped on the work of his time. He translated Latin and French books of great value into English, and wrote in that language poetry which gives him rank with the immortals. Lydgate, who knew him, called him the lode-star of our language; Ascham refers to him as the English Homer; and now, when he has been dead for more than five hundred years, and his works are read with glossary and grammar, he still has readers wherever the English language is studied throughout the wide world. To the Canterbury Tales, Chaucer's masterpiece, this popularity is mainly due. They comprise stories told by pilgrims on their way from the Tabard hostelry, Southwark, to the shrine of Thomas Becket, archbishop of Canterbury, who was murdered in his church in 1170. Henry the Second did public penance at his tomb; and in an age when pilgrimages were in vogue Becket's shrine became the most famous in Christendom.

The plan of Chaucer's pilgrims was that each should tell two tales going out and two coming back. But that plan was altered, as there were nearly thirty of the company, and we have but twenty-four authentic tales, preceded by a general prologue. The scheme of his tales is excellent. Neither Boccaccio nor Margaret of Navarre set their famous stories in so admirable a frame. The tales are chosen from every branch of fable literature. Legends, romances, fabliaux, travelers' tales and humorous narratives all pay tribute. But the charm of the work is the story-tellers themselves, and their prologues. All classes of English society are represented—knight, yeoman, churchman and members of the religious orders of various grades; the lawyer, doctor, a clerk of Oxford, merchants, tradesmen of sundry callings, a wife of Bath, a shipman and a cook. Altogether Chaucer gives a panorama of English life as it was in the year of grace 1386, such as no previous writer had ventured to produce. Other story-tellers have cleverly made known the ideals of an epoch; but in addition to ideals, Chaucer in the *Canterbury Tales* shows us the actual life of his times, presenting the picture with a vividness, truthfulness and wealth of illustration, to which other chronicles of that age are but as a child's picture-book to Hogarth's pictures of social life. Boccaccio told his stories in prose; but Chaucer, after studying French and Italian models, told his in English verse; and in the opinion of a high authority—the late A. C. Swinburne—told them “not only with more vigor, but with more sweetness than the tongues of his teachers.”

While a story in its simple form has never been better told than by Boccaccio and Chaucer, story-telling runs no risk of becoming a lost art. The modern story-teller has amplified the story told, and given to it plot and details. Of this Browning's *Ring and the Book* is a notable instance. The dry facts of that story took but a few words to tell. Yet the author expanded them into twelve books, filling four volumes, running through half a score versions. And

such was the story-teller's genius that each successive version is read with enhancing interest to the last sentence. Since the time of Chaucer, story-telling on the one hand diverges toward the modern novel and on the other toward the drama. In a story or epic, a past event takes up the attention of author and reader. The actors are the third persons spoken of. But a drama is a story in action. In it, each party to the story himself makes known the action, passion, word and deed his part of the story calls for.

Thus, taking as motives stories collected by William Painter from Bishop Bandello and others, and with the aid of Holinshed's chronicle and North's Plutarch, Shakespeare elaborated dramas that are the glory of his country. And thus, more recently, Wagner's conjoint genius of dramatist and tone-master, with his resplendent aids from architecture, histrionic skill, and the enchantment of instrumental and vocal music, gave to Faust and to Parsifal versions which for magnificence are wide as the poles asunder from the lowly puppet-play and bardic song of the original stories.

From the modern novelist we expect plot, counterplot, minute description of character, and next to photographic exactness in particulars of time and place the story covers. How well these exactions can be met may be seen in such novels as Scott's *Quentin Durward*, Charles Reade's *Cloister and the Hearth*, and Thackeray's *Virginians*. In these respectively are mirrored the times of Louis XI. of France, of Erasmus, and of the American Revolution. Between them and the *Canterbury Tales* lies a broad expanse through which the story, like the brook, "winds about and in and out." Whoever cares to travel over that course will find Arthur Ransome's *History of Story-Telling*, published since this paper was written, a most pleasant guide. It may suffice to say here, that Cervantes, Defoe, Richardson, Fielding and Smollett are but a few of the worthies to be met with on the way.

As to story-reading, thoughtful men agree that those

who read stories to the neglect of duty, or to find in them taint of uncleanness, are foolish and degenerate. And those who wisely read will find that stories supplement our best histories in teaching what it is man's special privilege to learn, namely, how our ancestors deported themselves in the world. And, further, a good story, occasionally read, can give relief and rest from the cares of life, and will prove an introduction to "beings of the mind, not of clay"—beings to be cherished as of the inner circle of our wittiest, wisest and best friends.

At the close of the lecture the customary vote was passed. Many of the gentlemen present complimented the lecturer and expressed appreciation of the audience.

Meeting then adjourned.

First General Meeting, Season 1910-11, Friday Evening, Oct. 7th, 1910

Lyman Lee, B.A., President, presiding.

Present, members of the Executive Council and an audience numbering 75. One application for membership was duly presented.

Mr. Lee addressed the meeting at some length and in part said that it had been the custom of his esteemed predecessors to review passing events in literature, science and art. While admitting that custom was a strong factor in such a society he did not wish on this occasion to follow. Friends would be pleased to learn that the society was now in its accustomed strong position again. Two years ago things were not so bright. Membership was small and funds low, to-day there are over 250 names on the roll and the finances were satisfactory. Naturally a society like this would fluctuate, but with the aid of friends he hoped that the society would continue in full vigor.

Professor A. H. Young, M.A., of Trinity College, Toronto, was then introduced. His subject being Michael Angelo.

MICHAEL ANGELO.

The lecturer started by showing some of the public buildings of Florence and described Michael Angelo as being the greatest figure in the Renaissance period in all Europe, spreading the spirit of individual thought. He was sculptor, painter, architect, civil engineer, worker in bronze and literary man all in one. In temper he was quick in anger and equally quick to forgive. In his great compassion he took into his home men and boys to educate. He lived and died a bachelor. When questioned he said that he had a mistress who would brook no rival—art—and

that his works were his children which he hoped would live after him and perpetuate his name.

He had many rivals—Raphael, the painter of beautiful Madonnas, was a court favorite and received many important commissions. With Leonardo da Vinci he was also in bitter rivalry.

Amongst the buildings of Florence the baptistry was octagonal in shape, and built of beautiful variegated marble. It had the celebrated bronze gates executed by Khiberti, which Michael Angelo declared worthy to be the gates of Paradise. Its roof was octagonal also, and led to the use of the dome. The next step in this direction was the baptistry at Pisa, another art centre. It was circular and had a dome surmounted by a lantern. This was the model for St. Peter's dome. In connection with the cathedral at Florence is the square tower built by Giotto in the 12th century. It has always been a model for beautiful space divisions. Gothic architecture did not take firm hold of the people of Italy. They followed rather the Romanesque and Moorish styles, with some elements of Greek.

The convent of St. Mark's shows the arrangement of the better class house—a court with a garden and fountain in the centre, surrounded by cloisters which opened on it. In these Fra Angelico, or Brother John, as he was called, lived and did much work. His favorite subject was the "Annunciation," and to this he gave an architectural setting such as he saw about him. His angel's wings seem to have been suggested by ancient mosaics in their rendering, and were painted red, blue, purple or gold to remove them from the ordinary and transport them to the ethereal. His madonnas are full of sweetness and gentleness, and frequently are framed by a setting of angels playing musical instruments.

On the walls of the Sistine chapel Botticelli painted a number of pictures in the life of Moses and in the life of Christ. Each panel contained several scenes, and was overloaded with figures, the anatomy of which was poor.

Michael Angelo was commissioned to paint the ceiling of this chapel. He spent four years in executing the enormous task. His first work was to prepare the ceiling by painting an elaborate design in grays. In the lunettes and arched spaces he placed the ancestors of Christ waiting in different attitudes for the coming of the Saviour. Between the windows are figures of the prophets and the Sibyls. There are nine panels in the ceiling, containing six pictures from the time of Noah and five from the creation. In his conception of the creation Michael Angelo shows no trace of irreverence. His drawing is always good, and his modeling of the figures suggests sculpture rather than painting. He glorified physical strength and exaggerated muscular development, seeking in this way and through beauty of line to suggest spiritual grandeur. Many of his figures were nude. As to this, the lecturer expressed the opinion that in the artist this was compatible with perfect modesty and chastity of mind, and that immoral suggestion came only through impurity of thought in the artist himself or in the beholder. Michael Angelo he described as being a high-minded and high-souled man. In later years he spent seven years painting the "Last Judgment" on the altar wall. It is the most complete expression of his genius in exaggerated movement and muscular development. Altogether, his work may be said to be unrivalled in the history of painting, in grandeur of conception, and boldness of execution.

At the close of the lecture a hearty vote of thanks, proposed by F. C. Grist and H. B. Witton, was presented to Professor Young.

Meeting then adjourned.

Second General Meeting, Friday Evening, October 21st, 1910

Present—Lyman Lee, B.A., President, in the chair: the Executive Council, and an audience of over 100.

One member was elected. Three names were proposed for election.

Minutes of previous meeting were read and confirmed.

The business being concluded, the President, in a few well-chosen words, introduced the lecturer of the evening, Mr. E. N. McLaughlin, a valued member of the society, who delivered a most interesting address on "Jamaica," of which island he is a native, though for some years has been a resident of Hamilton.

JAMAICA.

By E. Noel McLaughlin.

The lecturer quoted from "Home, Sweet Home," the lines:—

"Mid pleasures and palaces though we may roam,
Be it ever so humble there's no place like home,"

and remarked in opening that he would offer no apology for his choice of subject, Jamaica being "a land of perpetual summer, of perennial verdure, of forest clad mountains, soaring upwards into blue skies, and wooing soft kisses from langorous passing clouds; a land of not only feathery palm-trees, but also of plumed bamboos, where, if the date grows not ripe under sunny skies, the cocoanut does, and where the perfume of coffee flower and orange blossom take the place of the fragrant forests of the better land."

The audience was invited to voyage to Jamaica from

Halifax, "past the 300 islets of Bermuda, like emeralds set in a purple sea; past the salt islands of the Turks and Caicos group; past Haiti and Cuba, their outlines being discerned in the grey dawn which in a few hours breaks into golden day, pouring a flood of glorious light on the approaching mountains of sun-crowned Jamaica."

"A great rough fragment dropped from the stars
In the depths of a tropical sea!"

Rapidly indicating its position in the Caribbean Sea, the derivation of its name from the Indian words, Chabuan, water, and Makia, woods, and its appropriateness, the lecturer reviewed the story of its discovery, the Spanish period of occupation (during which its aboriginal inhabitants, numbering about 60,000 Arawak Indians, were ruthlessly annihilated), and the Spanish town of St. Iago de la Vega was built as the capital six miles from the sea, where, "flanked by the Rio Cobre on the north and east, and approached only by a hidden road from the shore, sheltered and hidden behind a range of hills to the south, and the luxuriant growth of a primeval forest, the Spanish Vice-Regent held his court in safety, unafraid even when the enemies of Spain cruised in the neighboring waters or hovered about the coast"), the British conquest in 1655, and many interesting facts connected with Jamaica's history, as well as individual life, the origin of the Maroons, descendants of runaway Spanish slaves, the destruction of Port Royal by an earthquake in 1692, the connection of Nelson and Rodney with the island, the abolition of slavery, the riots of 1865, and the surrender of the constitution, finally bringing the audience down to present day conditions.

A graphic description of the Kingston earthquake of 1907 followed, the particulars coming from an eye-witness. Here is an extract: "The shock lasted for 30 or 40 seconds, which seemed like hours, and in the midst of it there was an awful roar like thunder from the business streets higher

up, caused by the fall of nearly all the business houses, including the Colonial Bank, considered the most substantial building in the city. This was followed by a few moments of intense darkness, in which the sun was blotted out, and I could not see the men who stood only a few feet away. The darkness was partly due to the great cloud of dust which rose from the crumbling city, but for the moment we were all stricken dumb and wondered if the great judgment day had come. Shock followed shock, completing the destruction." The death roll reached over 1,000, and scarcely a house or building in the city escaped serious injury, and in many cases total ruin.

The scenery and climate of Jamaica were next described—mountains rising to 7,000 feet, and a temperature of 50 to 90, according to altitude and locality. Mention was made of the excellent road system, to which is devoted the revenue from spirit licenses, the lecturer remarking that "it is perhaps fitting that a traffic which is apt to develope unsteady steps and a disposition to stumble, should by a strange administrative irony, furnish the community with the means whereby the danger to the wayfarer, who has indulged his taste for the liquid refreshment it offers 'not wisely but too well,' is considerably minimised." Besides the road system, the railway service and other means of travelling were fully explained.

A description of a Jamaica sunset must not pass unnoticed. "When the great orb of day, with invisible hands gathers about him, as he majestically descends towards the horizon, clouds of every conceivable and inconceivable shape and color—purple, and red, and pink, and rose, amber, and opal, and white—surrounding himself as one might imagine the Great White Throne of the celestial city encircled with glory. Lower he descends, and long, slender strips of white fleecy cloud half veil his face, and are transfigured into bars of silver and curtains of a wondrous pattern, gradually changing into pale, and then flaming red gold, which dissolves, leaving the whole surface glowing

like a dazzling mass of burnished copper floating in a sea of auriferous splendour.

"And now from either side approach great rolling crimson cloud wreaths, which spread themselves above and below as though to form a gorgeous canopied couch for the resting place of the King of Day. For one brief moment he touches his couch, rests upon it, sinks behind it. Great beams of light materialise and spread themselves, fan shaped, from horizon to zenith—opal and amber, yellow and rose, mauve and purple, amethyst and emerald, and there is glory in the clouds which is reflected on sea and land. But, see! the sun has touched the horizon, has passed it; the glory departs, the gold is changed to bronze, the colours fade, the clouds darken, then disperse, then vanish, and only the blue sky remains. The evening star shines out,

" The day is done, and the darkness
Falls from the wings of night."

The lecturer proceeded to enumerate places and localities which tourists should see, such as Blue Mountain Peak, the Bog Walk drive, the fern walks of St. Ann, the Falls of the Roaring River in St. Ann, and Llandoverly River in Tulawney, caves, mineral springs, the Lover's Leap, horse and cattle farms, etc., etc. Of the view from Blue Mountain peak he said: "From your feet stretch out mountain ridges, in all directions, covered with every variety of tropical vegetation; forests perched on the steep sides of adjacent valleys which seem to slide from the sharp ridges and spurs, down into gorges and ravines, narrower and narrower, until the tree tops on the one side touch those on the other, and below is only darkness and unknown depth, save where rushing waterfalls and cascades leap from rock to rock, or steal by winding, sinuous paths through dusky gullies to the plains below. Lower down, coffee fields, cane fields, banana fields, here and there fill in patches of lighter or deeper green; and the rivers streak the lowlands with lines of silver, and flow on to the sea."

Dealing with the products of the country and its trade, it was pointed out that Jamaica is almost purely an agricultural country, the chief products being sugar, rum, coffee, fruit, cocoa, allspice and dyewoods.

The exports in 1909 amounted to \$11,500,000, and the imports to about \$12,000,000. Of the exports, fruit amounted to \$5,575,000. Of all the exports, 57.8% goes to the United States, 21.5% to Great Britain, 4.5% to this Dominion. Of the imports, 46.7% goes from the United States, 41.5% from Great Britain, 7% from Canada.

Communication and transportation are carried on between Great Britain and Jamaica by four regular steamship lines; between the United States and Jamaica by five regular lines, and between Canada and Jamaica by one inferior bi-monthly line. It was explained that, owing to these conditions, Jamaica is at the mercy of the United States, and that Canada could not hope to share in the trade until her steam service improved. The lecturer urged that this should be speedily done in the interest of both countries.

Many interesting facts concerning the population of 800,000 which Jamaica possesses, were given. Their social, educational and religious condition was fully dealt with. The people of mixed race appear to be making splendid progress. The lecturer claimed that "they are as well educated, as ambitious, and refined, as clever and as well positioned as Europeans. Among them are some of the most skilful physicians, the cleverest lawyers, the most efficient public officers, the most devoted clergymen and the ablest business men. Many are members of the local legislature and parochial administrations."

Of the peasant class (largely the black population), much could be said of the most favourable nature. They are slowly but steadily advancing in knowledge and in thrift, as well as socially and politically. As policemen, school teachers, tradesmen, agriculturists, and even clergymen, they were making good citizens and filling important places in the community. Stress was laid upon their good

nature, hospitality and respect for parents and authority; and the lecturer remarked concerning their faults, that "if not very thrifty it must be remembered that there is not much to save; if not overflowing with ambition consider how useless such ambition would be in a country where opportunities are so few; if he sometimes likes a drink, bear in mind that Jamaica rum is plentiful and cheap. If he occasionally appropriates a bunch of his neighbor's bananas, you should not overlook the fact that there was a good chance to sell it, and his own was not quite fit for market, and also that his neighbor will probably serve him in the same way, by way of reciprocity. If now and again he lapses from strict morality, think how inherent the tendency must be, when his ancestors of a century ago were in the same position as the cattle and horse kind—kept for their labour and their increase."

The lecture was concluded with the following poem, after which several stereopticon views of Jamaica scenes were shown and explained, the audience displaying the keenest interest and appreciation throughout.

I sit and dream in the eventide of a land in a summer sea,
Where the springtime is perpetual and the sunshine glad
and free;
Where the stars shine in full radiance from a glorious
cloudless sky,
And the full-orbed moon in its silver sheen looks down from
its chariot high.

I dream of its verdant hill sides; I dream of its valleys fair;
I dream of its leaping waterfalls; I dream of its balmy
air;
I see in my glowing vision the feathery waving palms,
I hear in its darkening forests the birds at their vesper
psalms.

And still, at the spell of fancy holds captive all my powers,
I sit in the magic twilight and dream throu the lessening
hours;
Till a myriad insect voices sing out to the fading light,
In the hush of the gathering darkness, and fill all the
silent night.

I listen in raptured silence till all the quivering air
Is awake with hallowed music, and my soul ahush with
prayer,
And the swish of angel pinions, and the light of angel eyes,
Reveal me a glimpse of Eden, and a vision of Paradise.

An enthusiastic vote of thanks moved by Mr. Grist,
and seconded by Dr. Morgan, was accorded to the lecturer,
and the audience separated after an intensely interesting
and enjoyable evening.

Third General Meeting, Friday Evening, November 4th, 1910

Lyman Lee, B.A., President, presiding.

Present, the executive officers and a large audience.

Two members were elected and three proposed for election.

The regular business being completed the President introduced Professor Kenneth Bell, B.A., University of Toronto, subject being Sea Power in British History in the Seventeenth and Eighteenth Century. The learned gentleman proceeding, offered some apologies for being perhaps a little British, but assured the audience that he would not in the treatment of his subject be jingoistic and in part said that Julian Corbett, in his history of the past ages, showed the clearness and method with which Chatham waged his victorious conflict against France. He showed immense shrewdness and ability, and it was due to his efforts largely that the foundation of the Empire was laid. The speaker also related many of the historic events of the past, and showed how the vast sea power of the Empire had protected the colonies. When Ireland and Scotland were united with England that was the greatest thing the Empire has seen, and helped more than anything else to make the British Empire what it is.

At the close of the lecture Mr. Child moved and Dr. J. Baugh seconded a vote of thanks. Mr. Child, Dr. Baugh and Mr. H. B. Witton each spoke at length in review of the many important points relative to the subject in this period of British history and expressed the keen interest the subject had evoked.

Fourth General Meeting, Friday Evening November 18th, 1910

In the unavoidable absence of Mr. Lyman Lee, President, Mr. G. Parry Jenkins, F.R.A.S., 1st Vice, presided.

Present, the Executive Council and a large audience

At the conclusion of the general business the President introduced the lecturer of the evening, Professor G. I. H. Lloyd, M.A., of Toronto University. Subject, National Economical Waste.

Professor Lloyd gave a most interesting address touching upon all topics relative to his theme in a masterly manner.

He spoke at length upon the conservation of the great natural resources of the Dominion, enumerating in detail the great mineral wealths. The professor proceeded to show the gigantic wastes everywhere, in respect to wastes in respect to business pursuits, waste in coal, relative to mining, the great wealth of collective humanity, waste in respect to child labor, waste in respect to manual labor, conservation of human resources as representing the national wealth, as to how we can estimate the cash value of a human being, water power, fisheries, foresteration.

The lecturer was followed very closely by the large audience as he proceeded to explain in detail the statistics relative to the several headings. Some of the revelations arousing particular interest.

At the close of the lecture the audience expressed its appreciation in the most marked manner. The usual vote of thanks was accorded.

Meeting adjourned.

Fifth General Meeting, Friday Evening, December 2nd, 1910

Lyman Lee, B.A., President, presiding.

Present, the Executive Council and audience of fully 100.

Two members elected.

Five applications for membership presented and passed on for election.

The general business being completed Mr. W. A. Child, Esq., Ph.B., M.A., was introduced and at once proceeded with his subject, Some Notes on Ethnology.

NOTES ON ETHNOLOGY.

By W. A. Child, Ph.B., M.A.

This lecture was illustrated by over a hundred pictures taken by the speaker, and to these it owed perhaps its chief interest. Unfortunately only a few of these could be printed.

For the last ten years the writer has been studying the different races of men and their origin and peculiarities, in various parts of the world. He has pursued this study in travels extending over 60,000 or 70,000 miles, in fact in every continent but Australia. He has studied the different races in connection with their history, their origin and their physical peculiarities, and has taken a great many pictures to illustrate the study. In studying the various books on the subject, the writer has found a vast confusion of conflicting theories and opinions.

Every writer must have his own pet theory of the origin of certain races. In many cases the so-called statistics are entirely at variance.

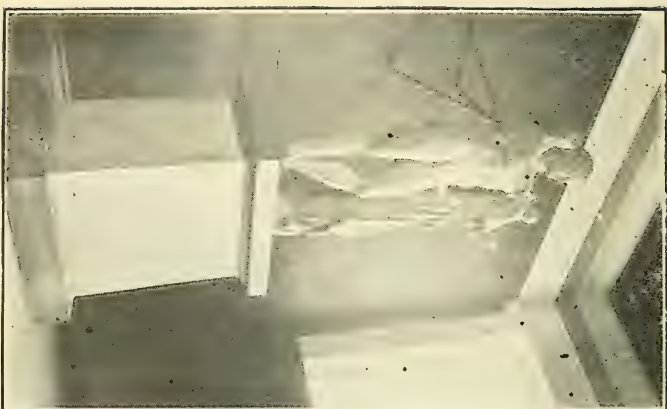
One great scholar will build up an elaborate theory of the origin of a certain race, all based on the assumption that



Stonehenge



Little Dark Cornishman
Possibly a descendant of the race that built Stonehenge.



Hermes of Praxiteles
Pure Aryan type



Creusa Shepherd
Pure Aryan Type

they are broad headed or brachy cephalous. Another will form an equally great theory absolutely opposed to the first based on the assumption that the race is dolichocephalous. Or sometimes the same assumed characteristics will lead to absolutely diverse conclusions. "There is nothing so deceitful as facts, except figures," and statistics are more deceitful than either. Almost every scientist has his own axe to grind in the shape of a pet theory to prove, and he often twists his facts to prove it, or makes the poor misused facts point in quite a different way from that in which nature intended them to point. In fact, there is no branch of science where there is so much unwarranted assumption, so many great theories built each on small and doubtful fact like inverted pyramids, as in Ethnology.

One man tries to prove or assumes the common origin of two very different peoples, from the fact that they both use the boomerang. Another confidently assumes an origin as proved by asserting that there is a language connection; whereas the said connection may be absolutely denied by all who haven't this theory to prove. Everyone strives for novelty or originality, and often for novelty rather than truth.

In this mass of conflicting theories and mendacious facts the writer has selected what seemed reasonable to himself. Every possible theory is held by someone, so he cannot claim any originality. He has no hope of making a name for himself as an Ethnologist, so he has no temptation to twist facts. He can only claim that his theories are formed after some investigation and not swallowed predigested from some other writer on the subject.

The writer has a great number of pictures on this subject, all taken by himself. Over a hundred of these were shown with the lecture, but unfortunately only a few could be published, and for this reason the paper loses much of its value.

It is not at all difficult to tell the different races, but it is very difficult to say how you distinguish them, and it is

in analysing and describing the differences that so much trouble occurs.

Race differences are often shown by the expression, by the manner of holding the lips. Sometimes the distinctions disappears in a photograph that were very apparent in reality. Consequently it is very hard to give scientific definition of race characteristics that are perfectly evident to any observant man. You can easily distinguish the Germans, the French, the Italians, in any great cosmopolitan city, but you would find it hard to say how you could tell them apart.

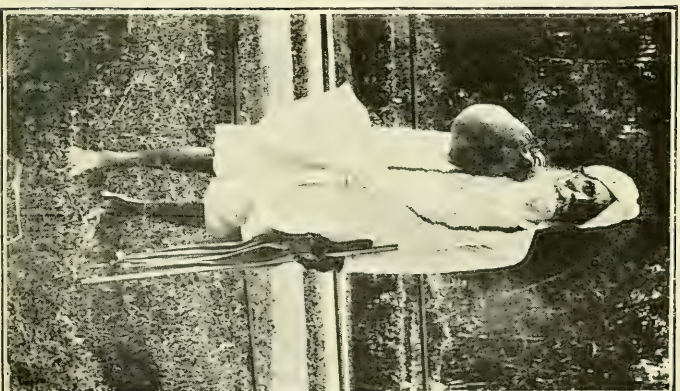
Consequently Ethnologists have tried to make rules to define these race characteristics. Some years ago it was the facial angle. You never hear of this now. A great deal is made of the breadth of the head as compared with its length. Much careful study has been devoted to classifying the people in different localities and different races according to the breadth of their heads. The result has as a rule been confusion worse confounded. The variations have been so very great and so unexpected that they have served to upset many beautiful theories and to bolster up many other theories that had no merit but their originality.

I believe the most important consideration is not the width of the head, but its shape, and the shape of the face. We have also to consider the shape of the figure, the thickness of the neck, the width of the face. One of the most useful points to note is the shape of the nose. By this you can in most countries, India, for example, distinguish the amount of negro or Mongolian mixture. The hair is one of the most persistent and reliable points of observation. The Mongolian and American races have always straight black hair, very coarse. The negro has kinky black hair that kinks into little curls. The Caucasian has wavy or straight hair, not so coarse as the Mongolian.

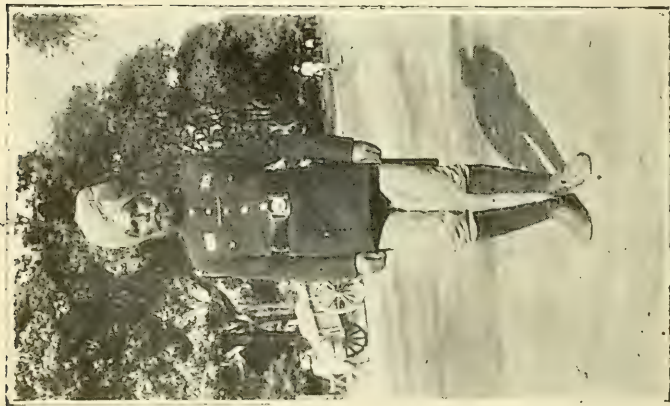
You must know that all this is due to the shape of the individual hair. The Mongolian hair is black and has a comparatively large cylindrical section. The negro is



Greek Priest at Corinth—Pure Aryan type
 Soldier—A common Greek type. Possibly a
 Slavonic and Mongolian mixture.



Hindu Priest
 Pure Aryan type. Observe likeness to Greek priest



Sikh Policeman
Pure Aryan type



"Family" Street Waterer, Rangoon

flattened like a thick ribbon, hence the kinks. The Caucasian is usually oval between these two.

In short, in investigating the origin of races every physical and mental characteristic must be given its true value, such as width and shape of the head and face and neck, the figure, the hair, the nose, the height of forehead, the breadth of hips, etc., etc., and also the language.

One must also consider that in some races are characteristics more persistent and predominant than in others. To judge a Negro and Mongolian mixture one looks at the hair. To judge an Aryan and Mongolian mixture one looks at nose, cheek bones, forehead and general figure, these elements being about in order of importance.

The writer will give a brief sketch of the origin of the human race, and the different divisions, and then show a number of pictures illustrating the different physical peculiarities and customs of diverse peoples. The great difficulty is, of course, to crowd into the brief space at our disposal enough to make one's ideas either intelligible or worth while, and at the same time interesting.

Many scientists consider the human race to consist of a number of species and that the separate races of men proceed from different original stock. That is, that Mongolians, Caucasians, etc., were evolved separately from some earlier forms of animal life. Some go so far as to believe that there are many hundreds of different original strains absolutely unconnected, being either separate creations or separate evolutions. Without taking the time to discuss this, I would say that it seems to me most reasonable to conclude that mankind is of only one species, and that all the human race came from only one pair of beings, either created or evolved.

The difference between the most diverse peoples is not a difference of species, but only of variety. One great argument for this is that all races of men will intermarry and produce offspring who are also fertile, while different species will not, as a rule, so cross, that is, not without loss of

fertility. It is inconceivable to the writer also that creatures so much alike as the most diverse races of men could have been evolved from separate stock. The likenesses are too great to be merely accidental or the product of similar influences.

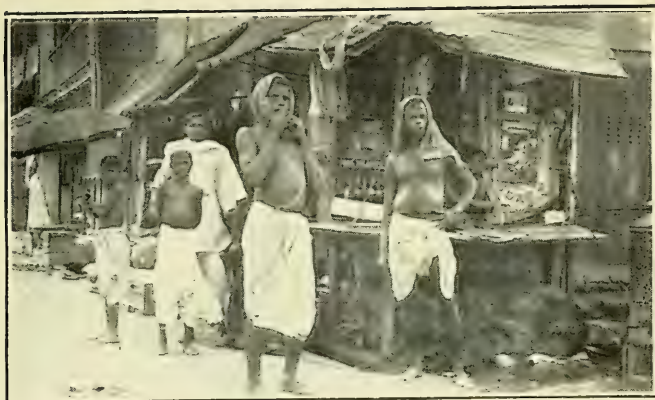
Therefore, though many of the greatest Ethnologists think otherwise, we beg leave to assume that all mankind came from one couple.

Now mankind existed in the quaternary epoch little different from what the race is to-day. If we assume an evolution from an earlier form of animal, that evolution must have taken place in the Pliocene times, or probably earlier. Man, as we first behold him, Paleolithic man, as shown by the scanty remains that have come down to us, was probably very little different from the man of to-day.

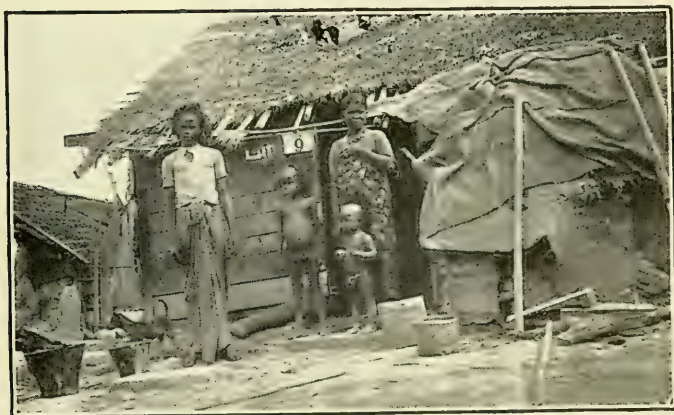
Paleolithic Man.

In various parts of the world, chiefly in Europe, and generally in caves, we find remains of a primitive race—so primitive that they had no weapons or instruments shaped for their use, not even spears or bows and arrows. They used at first just hard stones, generally flints with sharp edges, but they could not chip or shape these stones themselves. It was my privilege to be in Montone once when such a cave was opened, and I show you a few of these primitive instruments that I gathered there. I found out afterwards that they constituted a collection identical with that that the British Museum uses to illustrate the beginnings of civilization.

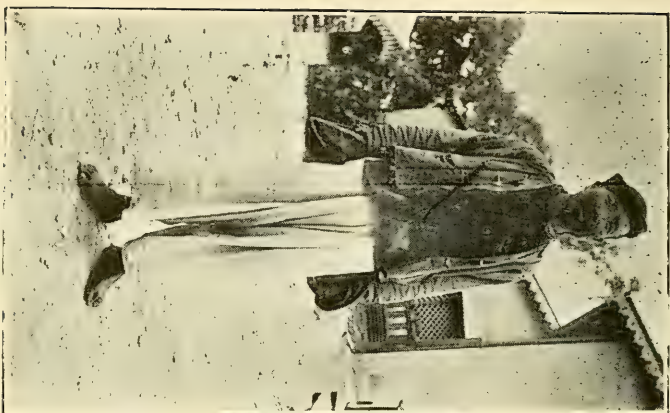
In a great many parts of Europe we find human remains associated with bones of prehistoric animals, cave wolf, bear, rhinoceros, mammoth, sabre tooth tiger, etc. One of the earliest of these specimens, found in 1856, near Stuttgart, in a cave in the Neander Valley, is a skull of peculiar type which has given a name to what seems to be a separate race of mankind. It is a very low skull with prominent projections over the eyes and nose, low retreating



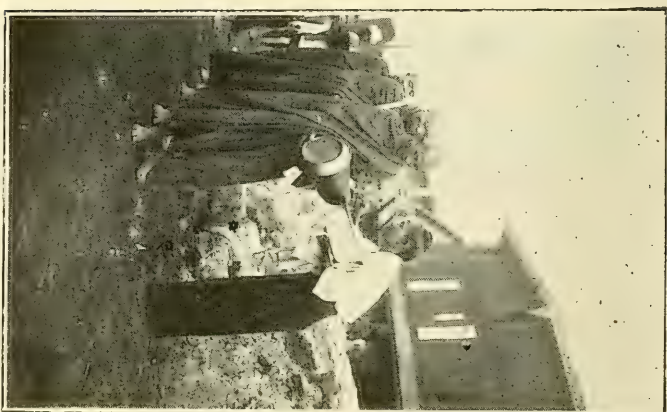
Street Scene in Calcutta. Pure Aryan types



Famil Types. Village on the Pegu



Tibetan



Burmese woman giving rice to Buddhist Priests.
All Burmese Types.

forehead and long narrow head. Other similar finds seem to point to a race of short, very muscular men with retreating foreheads and chins, and prominent jaws.

Many scientists have considered this race to be one step in the process of evolution, and asserted that the Neanderthal man was of a very low mental order, and that later races are evolved from him. Others assert that the Neanderthal race entirely disappeared and left no descendants.

De Quatrefages claims that there are in Europe to-day men of just this type, and I myself think I have seen such men. De Quatrefages thinks that the descendants of this race are a part of our present populations, but in opposition to the evolution theory, he asserts that this type is not mentally inferior. In fact, he mentions as good samples of the type a number of men of more than usual ability and some quite able scientists.

So I think I may say that it is not at all proved that the Neanderthal man is a lower step in the process of evolution.

These Paleolithic men were probably spread all over the world. The date of their first appearance is variously estimated say from 10,000 to 700,000 years ago. And in this immense time there is no evidence (I think) of evolutionary development. How long ago, therefore, must have been our first human ancestors.

One authority points out that the character of the aboriginal Australians is very similar to that of the Neanderthal man, and thinks that this race results from mixture of this old Paleolithic with other races.

Neolithic Man.

In any case, whether the Paleolithic race was all swept away, or whether it remained as part of the later, and even of the present population, there seems to have been an abrupt change at the close of Paleolithic times. It seems as if the old race had disappeared, possibly driven south by

the ice of an advancing glacial epoch, and for a time it seems as if Europe was uninhabited. Then another race appeared and spread over the face of Europe. They were also a long headed race, but their habits, culture and instruments were all different. They brought with them some beginnings of civilization. They knew how to chip and polish stone, to make spears, and probably bows and arrows. They had none of the artistic ability of the Paleolithic man, but were much further advanced in the development of civilization.

In Ireland, and across the South of England, are a series of great stone structures, of which the use and the meaning has been entirely lost. They consist of great circles of stone, huge single monoliths, sometimes standing alone, sometimes in circles, or in avenues. The stones are so huge that we to-day could not handle them without expensive machinery. What they were for and why they were built no man knows.

I show you one of my photos of Stonehenge. The theory of this sometimes held is that it was built by sun worshippers, and that at some time in the remote past the sun at time of the vernal equinox rose over the distant erect stone and threw its shadow between the two uprights across the altar.

This may or may not have been the case, but supposing it were so, one could calculate back to a time 3700 years ago when the sun was in that position at the vernal equinox.

Assuming this to be the case, this work is far older than the Druids or Kelts. The writer does not place much reliance on this calculation, but believes these monuments are far older than this. The calculation is given merely as a curiosity.

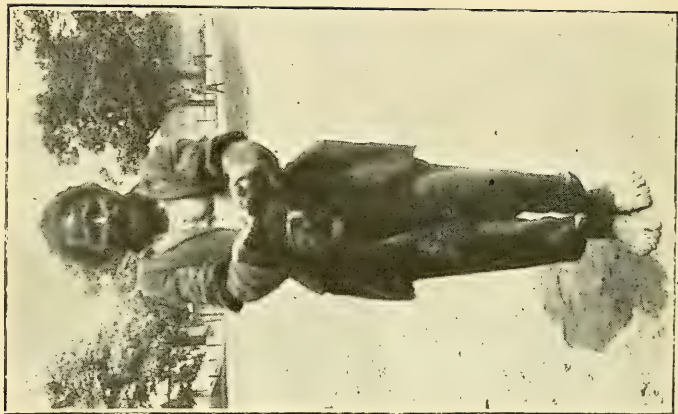
It was for a long time supposed that these great monuments were made by the Kelts, but now it is generally considered that they were built by a prehistoric race long before the arrival of the Kelts or old Britains. When the



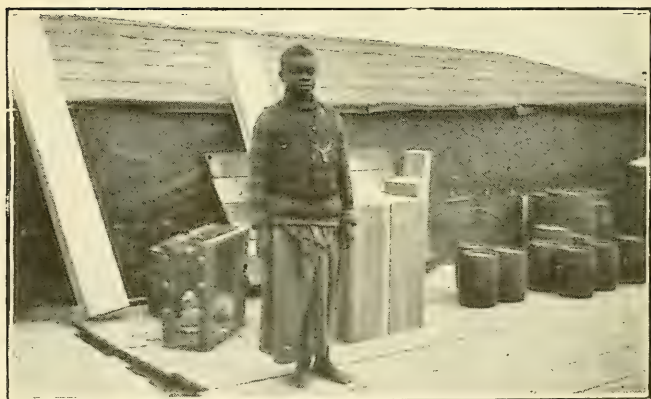
Japanese Peasant. Showing usual method of breaking up the soil, instead of plowing.



Scene in Java



Native of the Foothills of the Himalayas.
Showing Negrito Blood.



Negrito (Dwarf Negro), Central Africa

Kelts arrived they seem to have found these monuments, and to have used them for their worship, which had something of sun-worship in it.

Now, assuming these monuments to point to a much earlier race than the Kelts, they are still much more recent than the Paleolithic man—more recent by thousands of years.

In connection with these monuments we find graves and skeletons of a race of men, generally small with long-heads (in the oldest graves). We also find stone implements chipped and polished. In short, they were a more civilized type of man. Now, whence came they? We have no evidence of the beginning of this civilization. They came with it already formed, but fortunately they have left traces of their journey. No people ever left more clear or magnificent monuments of its progress. Working back from the British Isles, and the north of Europe, we find the same stone monuments in Belgium and Britany, and down through Spain and Portugal. Cross over to Africa and still they continue, getting more rude and primitive. Proceeding again eastward, we find them nearly to the border of Egypt. It seems then as if this primitive race, the Neolithic man, came along the north coast of Africa up through Europe. Possibly his beginnings of culture came from Egypt, that home of all civilization. At any rate, the culture grew and developed as it came west and north. It seems that the Neolithic men moved slowly, settling and developing as they moved, and leaving colonies at every point. The Berbers in Africa may represent the race now. The people of Spain and Portugal and South of France are made by a fusion of their blood with that of later comers. The Basques (that strange people stranded in the Pyrenees) seem to be a little colony left behind almost unmixed, and recently some philologist has traced a connection between the Basque and the Berber language. For many years the Basque people, forming a little isolated world in the Pyrenees, were a complete puzzle to ethnologists, as their langu-

age seemed to be totally different from any language in Europe, and to be like none other in the world. But now they seem to be a colony of Neolithic men left behind in the forward march of the race.

I show you a picture of a little black Cornishman, who may represent the race in England. After a good deal of search I found this specimen. He said his people had lived in Cornwall for unknown ages, and were one of the oldest families there. He looked like a foreigner in his own country, though perhaps his people had been there for many thousands of years. He would have passed without comment in a Spanish or Portuguese crowd. Yet his nephew, whom I saw, looked like a typical Englishman. It is this strange reversion to original types that enables us to judge of the origin and original characters of races.

Two laws seem to be all the time at work. There is a continual tendency to uniformity of type to produce average mixtures, if I may so speak, and yet there are occasional reversions to the familiar type occurring sometimes after thousands of years, and it is this that gives us a peep into the past.

Our Neolithic men from Africa seem also to have crossed the Mediterranean in three places. Probably the land was continuous at that time and the Mediterranean only a series of lakes, and the African races came and went across at Gibraltar, Italy via Sicily, and at Greece via Crete. And thus in all three peninsulas they constitute probably the basic elements of race.

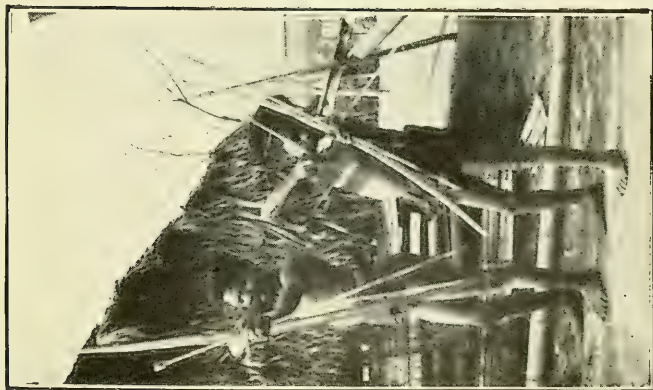
It seems to the writer that the greater part of the population of Italy is descended from the old Neolithic stock, and that notwithstanding the frequent invasions of other races this old African race is still predominant.

But in Greece, it seems to the writer, that the Aryan type of race prevailed in classic times, and that the Greeks of classic times were nearly pure Aryan.

In our Greek histories we used to read of a prehistoric race called Pelasgian, and we often wondered what this



Negrito Girl of Philippines



Negritos of Philippines

race could be and whence they came. Is it not likely that the Pelasgians were the old Neolithic or African people that reached Greece from Africa before the Hellenes came?

It seemed to the writer that he could see some trace of these people still in Greece. It is possible that the people of Epirus, or modern Albania, are mainly of this race. As we all know, modern Greece has been mainly repopulated by Albanians. It is possible that thus the Pelasgians have come to their own again.

Alpine or Round Headed Race.

After this African or Neolithic race there came another race into Central Europe and mingled with the previous population. These people were of small stature and round heads, as distinguished from their long headed predecessors. A great part of the population of the Alpine country and Central Europe are probably descended from them, and they probably came from Asia. But we have no time to speak of this.

Aryans.

After the Alpine race there came still another race who have imposed their language and institutions on all Europe and much of Asia. Generations of scientists have waged fierce war over the Aryan race. It is still an open question as to whence they came, how civilized they were, and how numerous. That is, did they constitute the bulk of the people when they settled, or were they merely a small number of conquerors who imposed their language and some of their customs on the conquered. Was the civilization there before they came, or did they bring it with them? What were their type and physical characteristics? Many of these questions will probably never be answered. The writer wishes to show some pictures of what he thinks is the Aryan type.

Assuming that the old Hellenes were nearly pure Aryan. It seems likely that their ideal of beauty would be

the perfection of their physical type. The writer had the privilege of photographing at Olympia the only surviving authentic statue by the most finished of the sculptors of classic Greece. We refer to the Hermes of Praxitelles. Taking this as the type of the Aryan Greek, I show many pictures taken by myself in Greece and in India of this same type.

The priests of the Greek church are almost universally perfect specimens of this type.

The priests of India are by tradition pure Aryans. Both are among the finest looking men in the world. Observe the likeness between the two, as shown in my picture.

It being universally admitted that the people of India and Europe are connected by their common Aryan languages, is it not clear that the physical type that is common to both must be the Aryan type.

India.

The people of India are largely Aryan, that is, people similar to ourselves and of the same general race division. Thousands of years ago the Aryan race was located probably somewhere in Central Asia, possibly in the great steppes of Russia near the Ural Mountains, or possibly farther south in Persia or Afghanistan. No one knows just where. They sent out repeated swarms of immigrants from the parent hive. Greeks, Italians, Celts, Teutons and Slavs—one after the other swarmed forth and sought new homes in the West, that is, in Europe, and they were our ancestors. But some swarms from the same parent hive went south over the mountains till they reached the fertile river valleys of India, and there they swept eastward in conquering hordes. They exterminated or enslaved the aboriginal inhabitants, and took all the fertile country of the river valleys. From thence they spread their conquests north and south. Thus these people of India are relatives of our own. Their language is like ours and has the same root or basis. We have to study the Sanskrit to under-

stand our own tongue. The blood of the aborigines is probably there still, but the Aryan characteristics have overwhelmed it, and in the river valley country the people are Aryan like ourselves. In fact, some of the finest specimens of the race are here. I think the Sikh policemen are the finest physical specimens of the Caucasian race I have ever seen. They have the prominent straight nose, just like our own; tall, square, athletic figures, straight black hair and features altogether European. Although as black as negroes, they are members of the white or Caucasian race. The type seems to improve as we go westward to the mountains, nearer the original source of the immigration.

Now, these people found in India, another race, and conquered, killed or drove them south. In the Deccan, the great peninsula of the south, we find people who are probably descendants of these same aborigines. But their characteristics have been so much modified by mixture with the blood of their Aryan conquerors that one can hardly tell of what race they originally were. It seems, however, that they were of the Mongolian stock, that is, of the yellow race.

Now, even this aboriginal race seems to have had to conquer another race still more ancient. For the negro race seems to have been here first of all. This brings us to one of the greatest curiosities of Ethnology, but of this later. There was also possibly a mysterious white race here of a very low type, of which some traces still remain. Now the people of India are mixtures of these four races.

In the north we have the Aryan purer as we go west, with prominent bony noses. In the south the mixture of Mongolian, Ethiopian and low Caucasian has imparted a change. The most noticeable thing is the shape of the nose. In the south the nose is low in the bridge, between the eyes

The Tamils are a people of the South of India and Ceylon that show these race mixtures very distinctly. They have the nose low between the eyes, denoting the presence

of Ethiopian or Mongolian blood. The general fineness of the features shows something of the Aryan strain. The wavy black hair shows something of the negro mixture. Their very frail, emaciated figures show possibly the Negrito or dwarf negro element. I am not sure of this point. The exceeding frailness and slenderness of the figure may point to Negrito blood, or be an inheritance from the low Caucasian, or it may come from generations of half-starved ancestors.

The Tamils are very slender and very black. One of our negroes would look pale beside a Tamil, and yet the Tamil has much white blood in him. He has a timid, hunted look. Like his Negrito ancestors, he is a wild thing.

The Sikh has the wild, fierce look of the bird of prey, eager to fight and tear his enemy to pieces. The Tamil has the wild, hunted look of an animal driven into a corner, but he wants to run away.

In Ceylon we find two races, Tamil and Sinhalese. The Tamils are a mixture of the aboriginal races. The Sinhalese are the descendants of Aryans who conquered them. The Sinhalese are splendid Aryan types, but not so large or fierce as those of the North of India.

If the writer met a Hindu in Rangoon or Singapore, or some city outside of India, he could tell with some degree of accuracy from what part of India the man came, by his physical type, largely by the shape of his nose.

As one goes north of the river valley country in India, the race changes as you reach the mountains. The high, hawk-like noses disappear and one sees flat noses and wide cheek bones. The tall, square, slender figures have gone, and we see short, sturdy men with straight hair and flat faces. The complexion is lighter, but yellower, and the Aryan has disappeared, the Mongolian is in possession.

Mongolian Race.

The Mongolian race is familiar to us all as seen in two

of its great divisions—the Chinese representing the central, and Japanese the northern race. They are people generally of short stature, broad heads, flat faces, with prominent cheek bones and noses flat at the bridge.

Their home is in Asia, and they seem to have spread from that centre. Central Asia is represented by the great Tibeto-Chinese group, of which I show you numerous pictures. They have lighter complexions and longer heads than the Mongolians—the Chinese being a type distinguishable at a glance from other Mongolians. They have a long head with a fine dome shaped skull sloping up from a low forehead. The large dome shape is the more noticeable by the shaving of the hair back from the forehead. Their complexion is a bright yellow, much lighter than other Mongolians.

The Tibetans are big, strong men with complexions supposed to be comparatively fair, but as I never saw one really clean I cannot say.

I suppose the earliest members of the great Mongolian race that we find traces of were the Sumerians, of Mesopotamia. The earliest race of Mesopotamia (the country around old Babylon), are called Sumerians. They were one of the first people to develop a civilization of their own, and their culture is fairly comparable with that of Egypt. Babylon and Egypt stand together as the two great sources of civilization. Now the ancient Sumerians seem to have been Mongolian in type, and we have been able to trace connections in their language with that of the Chinese, as well as the Tartar.

Later the Sumerians disappeared from Babylonia, and their places and type are replaced by that of the Semitic branch of the white race, but their culture remains as a basis of the civilization of later generations.

It is curious to note that as our civilization comes from the Caucasian race of old Egypt, the other great primitive source of culture is that of the Mongolian Sumerians, and

is probably the basis of the culture of the East in China and Japan.

The Burmese are a more slender people than the Tibetans, and in appearance are more like the Malays, whom they approach geographically also.

The Malays are darker and of a more rugged countenance than their other Mongolian brethren. As a rule they are small, slender men. A short time ago they were the most noted and the most bloodthirsty pirates in the world, and stories of their terrible deeds have been dear to the heart of every small boy. But I have found them especially good natured and likeable people, kindly and easy to deal with.

The Japanese are a mixture of three races. The ancestors of the present predominant race in Japan came across the north of Asia and down through Korea till they spread over to the islands. But there they found an aboriginal race already settled, and strange as it may seem to us, these aborigines were white or Caucasian people. They are called Ainus. (But of these later.)

The Mongolian Japanese conquered or drove these people north, but some traces of their blood still remain, mixed with that of the conquerors. I have seen people in the streets of Japan who were conspicuously of Ainu type.

The third element of the Japanese race came up from the south. They were the Malays and came from the Philippines. A taller and more slender race than the Northern men. I admit that I could not find any trace of this race in the south of Japan.

Mongolians in Europe.

There have been many Mongolian invasions of Europe, such as that of the Huns, the Turks, the Bulgars. Most of the descendants of these people have, however, been so mixed with Caucasian people that their original types are hardly noticeable, though occasionally one sees a perfect Mongolian type in the Balkan country.

Along the shores of the Baltic was a numerous Mongolian race, who have only partly lost their original type by Aryan intermixture. I give you a picture of a peasant from the Baltic regions who shows some Mongolian characteristics.

Among our numerous immigrants from the Baltic country, as well as from Hungary, and the Balkan peninsula, one often sees pronounced Mongolian types, that point to some invasion from Asia many centuries ago.

Ethiopian.

As I was sitting in the train and waiting for it to start in the little station of Siligurri, at the foot of the Himalayas, a little fellow came down to the train to beg. He was totally different from all the other natives around. He had a flat nose, wide nostrils, kinky hair, and a full beard also kinky. All the other natives had coarse, straight hair. The Mongolians there had no beards. The Aryans had thin, prominent noses. This little chap was a negro, and probably came from a little settlement of his kind in the neighborhood. A little eddy of humanity in the stream of strange races that had been running past for thousands of years. But how came they there? This points to the greatest mystery of Ethnology.

We all know the African negro and his peculiarities. There are two grand divisions of the race—the large, tall negroes that we all know, and the dwarfs or Pygmies. We have all read of these forest Pygmies, in Stanley's and Du Chaillu's books. Some of them, as well as being short, are exceedingly frail and slender, with a wild, hunted look.

Now, the negro race exists not only in Africa, but in India, the Philippines, New Guinea, Australia, and the western islands of the Pacific—that is the Melanesian—over 5-9ths of the circumference of the globe, in fact. How came they in all these places? They are not a maritime people, and seem to have no fondness or adaptability for

ships and sailing. They hate water in all forms. In most places they seem to be the oldest race, the first aborigines. Generally they live in the mountains or forests, as far from the sea as possible. They look and act like wild creatures, things of the wood and forest. In the Philippines they are small, slender, wild creatures, using bows and arrows, and shunning other races. They look like the Pygmies of Africa. Their culture is primitive. Some one has said that "the ordinary Aeta or Philippine Negrito can count up to five by the use of the fingers of one hand, the other hand being used to point off with. Some clever ones, we are told, can use two hands and count up to ten, and their professors of mathematics in the Aeta universities can reach 20 by using their toes as counters."

The Papuans and Melanesians are a larger and stronger and more civilized race, like the larger negroes of Africa. But everywhere the negroes seem to be the first comers, and how can we account for them? Some Ethnologists think that there was a great continent where the Indian Ocean now is, and that it served either as a stepping stone to bring the negroes from Africa, or that it was their original home. This seems a rather expensive way to bring them, but these Ethnologists also use the vanished continent as the home in which the human race was first evolved. It is very convenient, and being now sunk out of sight, we can arrange it as we like, and thus it answers every purpose for the development and spread of the race.

Caucasian.

In speaking of the white race one must put from one's mind the idea that color is any indication of race. Some of the finest specimens of the white race are among the darkest people in the world.

No type can be finer than that of the Sikh, but one of our negroes is a blond beside him.

I will not attempt to deal with the African or European

whites, but speak a few words of those of Asia and the Pacific islands.

All over the island world we find curious surviving populations and people that seem to be Caucasian with Mongolian and Ethiopian races surrounding them.

There seems to have been a stream of Caucasian emigration right across the north of Asia, coming down to Korea, where once existed a strong kingdom of Caucasian people. From there a Caucasian people spread to Saghalien and Japan, and when the present dominant race came they found these white Ainus already there.

In the Philippines the white race seems to be represented among the Igorottes. I show you some pictures of them, but confess that I cannot see the Caucasian character in any I have seen. Those that I have seen are distinctly Mongolian.

The Dyaks, of Borneo, are supposed by some to be Caucasian. I show you a picture of some, but my specimens seem to me unquestionably Malay or Mongolian.

But in the Polynesian islands we find some splendid specimens of the race. I show you some from Hawaii.

American Indian.

The American race is the most homogeneous in physical type of any of the great branches of the human family. About its origin there are as many theories as there are students looking for fame out of originality. Junks with people for Asia blown westward and stranded on our shores. Japanese, Tartars, etc., all gather here by various means that attest the ingenuity of the author of the theory. There is always a tradition also, and all sorts of language connection. Even our old friend Atlantis has been made to bring the Egyptians across the Atlantic to people America and build the pyramids of Mexico.

I have heard many and diverse theories promulgated before this Association. They were all interesting and plausible. What a pity they were untenable.

I myself had a fine theory. I believed I could trace the race to the Malays, blown westward in their outrigger canoes, etc. The truncated pyramids of Mexico certainly suggested those of the east, notably Boro Boedor, Java. It was a beautiful theory. I discussed it with a number of prominent scholars, and they agreed with me in a measure.

It was certainly a pity that the Polynesians (a white race) were east of the Malays that my heart was so set upon.

But if one has a good theory one must overlook these little awkward facts. Nature is perverse anyway, and one has to force one's facts a little. All scientists do.

But I have given this up, the situation was too much for me.

The American and the Mongolian are unquestionably closely allied. I have seen Chinese and Indians together in Peru when I could hardly tell them apart. The crowd in the street of Caraccas, Venezuela (Spanish and Indian), is hardly to be distinguished from the crowd in Manila, Philippine Islands, who are Spanish and Malays. Many suppose that our American Indians are descendants of Tartar tribes who came across the narrow seas from Siberia. Possibly this is so, but the actual evidence on hand would rather point to the Siberians being emigrants from America. I mean that we know that the human race has been in America for untold ages, and we do not know as much for Siberia, though doubtless it is as old there, though we haven't the investigations to show it.

The whole matter is after all very simple. Man has been in America back to Quaternary times, and possibly as long as Paleolithic man in Europe. There may have been junks stranded on our shores, or Malays blown hither in their outrigger canoes, but these are only incidents, and trifling ones. They do not account for the bulk of the population.

Doubtless many Tartar tribes came back and forth between Siberia and Alaska, but this does not account for the

bulk of the Americans. They were here for untold ages, and these trifling accessions were of little account.

If the human race is all from one pair, as I suppose, it was split up hundreds of thousands of years ago into the four main strains. One can only say that the American and Mongolian were together some time after separating from the other parent stocks. They separated later and a branch occupied Asia. Another branch, a remarkably homogeneous one, occupied America, but this was so long ago that though the physical likeness remains to some extent, no language trace can now be found.

Since delivering this lecture the Yale exploring expedition in Peru has found human bones in glacial drift which is calculated to have been deposited at least more than 150,000 years ago.

Thousands, or hundreds of thousands of years ago, the different branches of the human race separated from each other and left their ancient home, which was perhaps on that shadowy continent now buried beneath the waters of the Indian Ocean. There seem to have been three grand divisions—Caucasian, Mongolian and Ethiopian, which later divided into minor races and which took different routes, as I have just explained, in their outward march to people the earth. In these hundreds of thousands of years of wandering, under different conditions and different climates in all parts of the earth, the various branches of our race collected experience and wisdom and adaptability, each to its own circumstances. Each race has something of its own that it can teach all the rest, some talent or experience in which it excels all others, and so every race can learn from all of the others.

Finally, after these great wanderings, they are at length coming together again in the new continent where the East meets the West, each with its talents to add to the common stock.

In the two Americas, North and South, we have representatives of almost all the different races of the globe,

and in future generations, when these widely different peoples shall have been assimilated, what will be the resulting race? Will it be similar to our original ancestors, with all the wisdom of the ages? Who can tell!

The splendid lecture was illustrated with upward of 100 views, which added greatly to the interest of the audience.

Mr. J. H. Smith moved and Mr. Gill seconded a vote of thanks to lecturer. Several gentlemen spoke at length in review of the address and speaking in testimony of the pleasure all present had derived.

Mr. Child spoke in acknowledgement and answered many questions asked relative to the peoples described.

Meeting then adjourned.

Lecture Hall, Friday Evening, December 16th, 1910

G. Parry Jenkins, F.R.A.S., Vice-President, in the chair.

Present, the Executive Council and a large audience of members and friends.

Five applications proposed at last meeting were duly elected.

One application for membership presented and passed on for election.

The business being completed the President introduced the lecturer of the evening, Professor E. J. Kylie, M.A., Toronto University. Subject, Early English Life.

In his introductory remarks the speaker told of the state of government and civilization and people under Roman rule. The Romans, he said, had built cities and roads in conformity with their ideas of nation building. The existing conditions at the coming of the Angles and the Saxons, he pointed out, influenced the destiny of the nation. The conditions as they exist in Canada to-day would govern the destiny of Canadians. No race should be ignored in the study of the history of the country, and the Deukhobors and Galatians should not be overlooked in the study of the destiny of Canada and Canadians.

The recent discoveries following excavations at Colchester, England, showed that there had undoubtedly been a Roman city in existence there. The civilization of the Romans formed the basis of the civilization of to-day, he declared, and many of the institutions of the early people were preserved by the present generation.

In closing, Prof. Kylie described the inauguration of the feudal system and explained how the king was made such an important part of the life of the government and nation.

Quite a lengthy and interesting discussion followed the lecture. Dr. Baugh, H. B. Witton and G. Parry Jenkins speaking at some length on some of the more important points presented by Professor Kylie.. Vote of thanks was duly passed, presented and acknowledged.

Meeting then adjourned.

Seventh General Meeting, Friday Evening, January 6th, 1911

Lyman Lee, B.A., President, in the chair.

Present, the Executive Officers and an audience of some 75 members and friends.

One application for membership was presented and one elected.

The minutes of previous meeting were read and confirmed.

The President gave a short address reviewing the work done by the Association, said that it was gratifying to the Council to see the large audiences that had greeted the several lecturers and asked those present to obtain copies of the syllabus, present it to their friends and to make the aims and objects of the Association known as widely as possible.

There being no further business the President then introduced Dr. J. Heurner Mullin, who proceeded as follows

The Influence of the Medical Milk Commission.

Mr. President, ladies and gentlemen of the Hamilton Association. It gives me great pleasure to have this opportunity of appearing before you. From my childhood up I have been accustomed to look up to the high standard of work done by your Association in various branches of scientific thought, partly on account of the intimate family friendship with some of your honored members, but also by various opportunities given me of attending occasional meetings in the past. I appreciate more than I can properly express the honor of being placed on your syllabus for this year, and I trust what I may say will be found neither too commonplace nor too technical. I have tried to avoid giving figures as much as possible.

In presenting this subject for the evening's discussion I do so from the attitude of a correlator and not as one having had any large experience in this particular field of work. Much of what I shall say will be merely the presentation of facts which are well known to most of you present. If I can with this arrangement entertain you, and with these few facts drive home arguments which should stir up a deeper interest in this most important problem, I shall be repaid for the time spent in hunting up this literature.

We must realize that the "Clean Milk" question is now demanding attention owing to the progress of our civilization, and the formation of large cities, with greater distances from our sources of supply and consequent delays in delivery. New York brings milk from Ohio, and even Toronto from as far as Essex County.

Not being a public officer nor even a private citizen with any marked revolutionary spirit, I cannot see that it becomes my duty to offer personal criticism on local conditions. I must admit that I had some inclination (some months past) to prepare certain photos for the screen illustrating these for your observation. Perhaps I can suggest another simpler plan.

In looking over the work done by medical men in the interests of the clean milk campaign, we are reminded of the early disconnected and very unsatisfactory suggestions which were made by our profession in various sections, impossible restrictions were imposed, and these earnest novices were subject to much ridicule by the laity represented both by the farming community and the consumers alike. They were told that they were trying to introduce the technique of the operating room into the cow barn and were advised that in order to produce the goods that the cost would defeat the very object of their work by making the price prohibitive, except to the very rich. This has been changed to a large extent, and there has been formed and is now active in this country an Association of

Medical Milk Commissions. This includes local branches formed in most of the large cities of the U. S. A. and some in Canada. Uniform standards have been adopted and the *modus operandi* has been better understood by the producer and better appreciated by the consumer. With the growth of the medical commission idea there follows a better understanding and a deeper interest in the clean milk movement.

The first Medical Milk Commission had its inception in the efforts of the profession of Newark, N.J., in 1892, to solve the problem of feeding infants, deprived of their natural source of supply. It was coincident with the early work done in this country and Europe on the nutrition of infants and the use of the so-called modified milk. The need of clean milk for this purpose, and with it the general need of milk pure and safe for feeding the adults, was sufficiently appealing and important to spread interest in this work.

I propose to give you a glimpse of the work that has been done in these various centres, and with this some of the reasons for their existence. I want to show you the necessity for a most rigid inspection; and must even admit that with all of the very best there will be considered at times the possibility of error and the infringement of rules, while certain steps in the production are still in the hands of mortal man. Certified milk can never be an absolutely guaranteed product when it reaches the consumer. It is impossible to carry out these tests before the milk is used, from their very nature. But this fraction of error has been so reduced that the system now in operation has been accepted in many of the largest centres of population in the U. S. A.

The Medical Milk Commission unit in each locality is willing to carry out their part of this necessary inspection, and this entirely without monetary reward. It is distinctly accepted that medical men acting on these commissions shall not charge or accept any fee from any one interested

in the business under inspection, nor should he attend them in the private capacity of family physician during such time of service on this commission.

It is not intended that the Medical Milk Commission shall be antagonistic to the professional sanitarians, that is, the departments of public health, but is expected to work in harmony. In many centres it is begun through the efforts of the local M. H. O. In arranging for the supply of this high grade "certified milk," which is intended for infant feeding and other special purposes, the Medical Milk Commission will in no way supplant or interfere with the general license system which has been placed by law under the control of the Board of Health. More than this, we must point out that when the local Boards of Health are willing to adopt regulations and provide inspectors so that they themselves can certify "certified milk" then indeed will the administrative work of the Commission come to an end, and in future they would only act in an advisory capacity. This is certainly public health work, and should be attended to thoroughly and properly by the professional sanitarians and the public should pay the bill.

I will, therefore, present a plan of an "ideal organization" of a local Commission suitable for work in a large city, outlining in this manner the special work that is to be done in the various branches. In order to completely fulfil its objects, this Medical Milk Commission will bring into its fields of activities besides the members of the medical profession, several other professional workers: namely, the analyst, the bacteriologist, and the veterinary. It should include a representation from the local Board of Health.

Its objects are to obtain a supply of clinically clean milk, to spread its educational influence, to stimulate research in all branches of science interested, and to bring together for the "common good" the united co-operation of all general practioners, professional sanitarians, and ex-

perts in bacteriology, analytical chemistry and dairy hygiene.

PLAN.

The duties involved in the organization of the Commission will fall into four distinct lines of supervision.

1. Regular and systematic medical examination of the employees on the dairy farm, and a continuous knowledge of their health and hygiene.

2. Regular and frequent chemical analyses of milk, together with frequent bacteriological examinations as a "Detective control" over the methods employed in the collection and handling of the milk.

3. Supervision of the veterinary in the work of selecting and protecting of the herds, detecting disease and excluding tuberculosis.

4. Supervision of dairy hygiene in stables, in dwellings, and in the detail of collecting, handling, refrigerating, bottling and transportation of milk.

The combined result of such medical control of milk productions was given the name of "Certified Milk."

Let us investigate some of these headings more thoroughly and let us see why these departments are necessary.

It is certainly of the greatest importance to exclude persons coming in contact with infectious disease. Typhoid, Diphtheria and Scarlet Fever epidemics have been directly traceable to certain milk supply. Up to 1895, Hart, Busey and Koben had collected 240 such epidemics, and in addition Trask, in 1909, adds 260 from the literature and special reports. In both of these lists there are included only those in which all this evidence was sufficiently definite. The explosive onset and the distinct route (follows the milk) are features which should at least arouse suspicion.

As regards Typhoid Fever we know that persons who have suffered from this disease act as carriers of the infection for many years—bacilli are excreted from urine or faeces. From 2 to 4% of all cases become chronic carriers.

Evidence of such cases has been clearly proven in at least three persons who have become notorious. Typhoid Mary—12 years, Massachusetts—case—30 years (probably a re-infection). Glasgow case—16 years. These people went about year after year spreading infection.

Under the head of carriers must also be included certain persons who present ambulatory forms of this disease, and also certain others who become infected and yet never develop. These latter may for a time at least be considered as possible carriers.

“Diphtheria carrier” should refer to people who harbor diphtherial (Klebs Loeffler) bacilli in the nose or throat, although they may or may not be then ill with the acute disease.

It is also of interest to know that employees are not suffering from skin disease or tuberculosis. The mental capacity of the employers is also deserving of some attention, since with these improved methods which are necessary in the production of Certified Milk, greater skill will be required by all engaged in handling the same.

The employees should be housed in comfortable, sanitary quarters, and there should be provision for quarantine in case of illness suspected of being of an infectious nature.

Milk from the udder of a healthy cow is rarely sterile, but with proper methods occasionally it has been removed in small quantities free from micro organisms, and as such has been kept for over two years. This is not the milk of commerce. Milk while passing through the teats receives its initial contaminations by organisms which have gained access thereto from the outside world. From the time of

milking until it reaches the consumer it is liable to be contaminated in various ways.

Milk holds a peculiar position amongst food stuffs in that it is an excellent medium for the growth of micro organism, both ordinary putrefactive or disease producing varieties. Growth may be most rapid under favorable conditions. Let us refer to some reports on the number of organisms found. In St. Petersburg, milk as delivered to the homes contained from 10 million to 32 million, London 31 million, New York 35 million, and in Washington (1906), as high as 307 million, and average about 22 million bacteria to C. C. (One C. C. = 15 drops.)

If milk were transparent this luxuriant growth would be plainly visible to the eyes, and a similar growth on ordinary media would render the same distinctly unsightly and disgusting.

Compare this with an average count of sewage, and from figures which I show you giving the average estimate of bacilli in the latter, demonstrate that such sewage rarely exceeded 4,000,000. You will readily see the necessity for

Sewage of—	Average for—	Bacteria per cubic centimeter.
Boston, Mass. (a).....	1894 to 1901.....	2,800,000
London, Eng. (b).....	1894 to 1901.....	2,000,000 to 11,000,000
London, Eng. (c).....	1898.....	3,500,000 to 4,000,000 (crude sewage)
Lawrence, Mass. (d).....	Sep. 24 to Oct. 24, 1890.....	3,034,000
St. Mary's, Ohio, (e)....	16 Samples, 1907.....	5,600,000
Westerville, Ohio, (e)....	16 Samples, 1907.....	2,350,000
Marion, Ohio, (e).....	16 Samples, 1907.....	239,000

the prevention of all possible contamination, rapid transportation and the liberal use of ice, especially in the summer months. In the collection of samples of Certified Milk, the greatest care is necessary in order to prevent bacterial growth before the milk reaches the laboratory.

It has been demonstrated that fresh milk has a germicidal effect on organisms contained during the first few hours. The following table clearly shows this effect, and also the rapid growth of such bacteria under favorable conditions.

Milk from a healthy cow immediately after milking contained 400 bacteria per cubic centimetre:—

Time after milking.	Bacteria per cubic centimeter at different temperatures.		
	Room temperature.		
	16 to 25 c.	15 c.	37 c.
2 hours	430	.....	.....
4 hours	100	450	350
6 hours	350	600	2,100
8 hours	450	300	345,000
10 hours	500	350	1,780,000
12 hours	400	300	32,800,000
14 hours	500	400	75,500,000
24 hours	5,000	2,000	Sour.....
36 hours	60,000	2,000	.....
48 hours	366,000	1,000	.....
60 hours	780,000	3,800	.....
72 hours	24,200,000	61,000	.....
84 hours	250,000,000	118,000	.....
96 hours	330,000,000	3,080,000	.....
108 hours	910,000,000	33,400,000	.....
120 hours	Sour	192,000,000	.....
144 hours .....	.....	Innumerable	.....

Certified milk in Ontario to-day contains less than 10,000 in summer, and 5,000 in winter months, and must be kept cold (under 45° F.) until it reaches the consumer. As regards the chemical examination, this is certainly of secondary importance to a knowledge that the milk is clean and that all efforts have been made to prevent contamination. However, it must contain 12 to 13% of solids, of which 3½% to 4½% are butter fat, and in addition must be free from all foreign substances, coloring matter or preservatives.

The practical value of these tests is that they will indicate the addition of water and the extraction of cream, which

are fraudulent practice. The bacteriological examinations will give the cue as to the cleanliness of the methods employed—the temperature regulations and the age of the milk. With the bacterial count as a guide one can readily locate the cause of any trouble and more easily institute measures to correct this.

In order to carry out these tests thoroughly and satisfactorily the laboratory should be properly equipped, and have a competent trained expert in charge. We must again thank your Association for the part they have played in presenting the necessity for such work and equipment before the civic authorities last spring.

In order that he may know the continuous state of health of the cattle, the Veterinary should make at least monthly visits of inspection to the farms and dairy. He should keep accurate records of each animal, breed, etc. And he should isolate at once all animals suspected of any disease. All cows should be tagged, tattooed or otherwise marked for identification.

Certain diseases of cattle are apt to injuriously effect the milk, or even convey the disease to the consumer. Dr. Rutherford, in his address before the Canadian Medical Association, made special mention of these, and at least tuberculosis, cowpox, actinomycosis, foot and mouth disease, anthrax and milk sickness have been admitted by most authorities.

In 1901 Koch startled the world with the assertion that human and bovine tuberculosis were two distinct diseases, and that the latter (bovine) could not be conveyed to the human.

Many and most elaborate and exhaustive experiments were conducted by different observers throughout the world, and these have definitely shown that the great master was wrong. Tubercle bacilli of bovine origin can certainly set up numerous lesions in the human body. In future tuberculosis must be classified according to its

origin, and human and bovine must be considered as different varieties with distinct characteristics.

Possibly originally these were the same, but long continued residence in one host have served to bring about these differences.

Formerly all bacilli found in man were considered human type, but the Royal Commission have clearly shown that from 12 to 20% of lesions in the human body are caused by organisms of the Bovine type.

It is well known that tubercle bacilli can be excreted with the milk from cows which show no physical signs of tuberculosis, and the same can only be demonstrated by the Tuberculin test. And, beside this method, these bacilli are also excreted with the feces, and may be conveyed to the milk with other barnyard filth.

Rutherford took a certain number of Reactors (without manifest disease), and used the milk from these animals in feeding hogs. At the end of one year 50% of these pigs were tuberculous.

In the report of the International Commission for the Control of Bovine Tuberculosis, we find the following conclusions regarding the Tuberculin test:—

“1. That Tuberculin, properly used, is an accurate and reliable diagnostic agent for the detection of active tuberculosis.

2. That Tuberculin may not produce a reaction under the following conditions:—

- (a) When the disease is in a period of incubation.
- (b) When the progress of the disease is arrested.
- (c) When the disease is extensively generalized.

The last condition is relatively rare and may usually be detected by physical examination.

3. On account of the period of incubation and the fact that arrested cases may sooner or later become active, all exposed animals should be retested at intervals of six months to one year.

4. That the Tuberculin test should not be applied to any animal having a temperature higher than normal.

5. That any animal having given one distinct reaction to tuberculin should thereafter be regarded as tuberculous..

6. That the sub-cutaneous injection of Tuberculin is the only method of using Tuberculin for the detection of tuberculosis in cattle, which can be recommended at the present time.

7. That Tuberculin has no injurious effect on healthy cattle.

Evidence from Tuberculin test—That a positive reaction to Tuberculin in any properly conducted test, official or otherwise, in any one animal in any herd, shall be considered evidence sufficient upon which to declare the herd to be infected."

Accurate statistics regarding the percentage of Tuberculosis in our cattle is not yet available, but it seems fair to conclude that not less than 20% of our dairy cows are tuberculous.

Four recent investigations taken together show that among 439 samples of milk, 36, or 8.2%, were infected with live, virulent tubercle bacilli.

Without considering in detail the other various diseases to which the cow is liable and regarding which there should always be expert advice by capable veterinary, certain abnormal appearances and conditions can be referred to in passing. Should the milk be slimy, stringy or ropy, or should the taste be bitter or offensive, should it be visibly colored, red, pink or blue, it should certainly be unsuitable for the market. The udder acts as a natural emunctory, and like the kidney may eliminate active principles contained in certain foods, drugs or poison, or these conditions may be the result of bacterial growth after the milk leaves the cows.

We have heard a great deal about the amount of dirt removed from the milk by certain types of machinery. One estimator says that in Berlin 45 tons of barnyard filth

are consumed annually along with the milk. Milk from a healthy cow is certainly at the outset free from dirt. The dust floating in the air, lying on the barn floor, mixed with the hay, or concealed by the hairy skin of the cow, furnishes a large proportion of the dirt, even in somewhat carefully handled milk. When less care is taken actual refuse in visible masses can be seen as a sediment in the bottom of the can or bottle.

Let us, therefore, refer to certain features in dairy hygiene, which form the basis of all rules and regulations in city by-laws or otherwise for the control of clean milk. I take the liberty of quoting in part from the Canadian Medical Milk Commission's report:

1. The barnyard should be free from manure and well drained, so that it may be free from stagnant water. Observance of these rules frees the barnyard of objectionable smells and diminishes the number of flies. These flies are an element of danger, being fond of both filth and milk, and are liable to get into the milk after having soiled their bodies and legs in recently visited filth, thus carrying it into the milk.

The stables should be well ventilated and lighted. Some authorities require at least four square feet of window glass, and at least 500 cubic feet of air space for each animal. The ceilings should be tight and the floor sanitary and preferably of cement. The manure should be removed from the stalls at least twice daily. All sweeping and cleaning should be finished at least one hour before milking, so that at that time, especially, the air should be free from dust.

The importance of perfectly clean, pure water has been generally recognized by all, both for drinking and for sanitary purposes. It should also be abundant at all seasons, sufficient for personal cleanliness, for the laundry, for washing utensils, and for the premises generally. Convenience of the supply is a consideration which should receive attention. If this water should have to be hauled by

wagon or even carried very far from the pump by hand in pails, human nature will surely resort to economy in matters of cleanliness.

As referred to above, the cows should be under the inspection of a skilled veterinarian, and certified healthy in every respect.

The whole body of each animal should be groomed once daily.

If the hair in the region of the udder is long it should be clipped. Before each milking the flanks, inside of thighs, and udder should be washed thoroughly (many use two changes of water), and then all dried, especially the udder and teats, using a clean dry towel.

The cows must not be allowed to lie down after being cleaned for milking until the milking is finished.

The milker should be personally clean. Before milking the hands should be thoroughly washed in hot water with soap and nail-brush, and well dried with a clean towel. On no account should his hands be wet with milk or other fluid during milking.

The milking should be done regularly at the same hour morning and evening, and in a quiet, thorough manner. Light colored washable outer garments should be worn during milking. They should be clean and dry, and when not in use they should be hung in a clean place protected from dust.

Milking stools must be kept sterile. Iron stools painted white are recommended.

All other persons engaged in the dairy should be reliable and intelligent. Children under twelve years should not be allowed in the stable during the milking, since in their ignorance they may do harm, and from their liability to contagious diseases they are more apt than older persons to transmit these diseases through the milk.

Cats and dogs must be excluded from the stables at all times.

The first few streams from each teat should be discarded in order to free the milk ducts from milk that has remained in them for some time, and in which bacteria are sure to have multiplied greatly. If in any milking a part of the milk is bloody and stringy or unnatural in appearance, the whole quantity of the milk yielded by that animal should be rejected. If any accident occurs by which the milk in the pail becomes dirty, all the milk should be rejected, and the pail should be cleansed and sterilized.

The milk pails should have an opening not exceeding eight inches in diameter.

The milk of each cow must be removed from the stable to the dairy immediately after it is obtained, and strained through a sterilized strainer.

The rapid cooling of milk is of great importance. The milk should be cooled to 45 deg. F. within one hour after milking. Aeration of pure milk beyond that of milking is unnecessary.

All dairy utensils, including bottles, should be thoroughly cleansed and sterilized. This can be done by first thoroughly rinsing in warm water, then washing with a brush and soda or other alkaline cleansing material and hot water, and thoroughly rinsing. After the cleaning they should be sterilized with flowing steam for one hour, or with steam under one atmosphere of pressure for fifteen minutes, and afterwards be kept inverted in a place free from dust.

The dairy should be a building separated from the house and stables. The room in which clothing, utensils and bottles are cleansed and sterilized should be separate from the milk cooling and bottling room.

Bottles after filling must be closed with sterilized discs and capped so as to keep all dirt and dust from the inner surfaces of the neck and mouth of the bottles and stored in a separate refrigerator.

The following table of bacteria counts show the necessity for some of the above regulations: —

		HAY OR GRAIN.	
The Effect of Feeding in the stables just before milking.	Average before	2,906	
	“ after	3,506	
	Increase	1,400	
		DRY CORN STOVER.	
	Average before	1,233	
	“ after	3,656	
	Increase	2,423	
		BRUSHED DRY.	
The Effect of Dry Brush- ing just before Feeding,	Average before	1,207	
	“ after	2,286	
	Increase	1,079	
Advantage of Wiping	Average wiped	7,716	
	“ not wiped	1,058	
	Decrease	6,558	
		In a Dirty Barn.	
Advantage of Closed Pail,	Open Pail.	3,439,200	
	Covered	103,600	
	Decrease 1-34, or barely 3 per cent.		
		In a barn with average care.	
	Open pail	33,150	
	Covered pail	1,740	
		Clean Barn—considerable care.	
	Open pail	1,610	
	Covered pail	280	

Some of those present may think that the amount of care necessary for carrying out these precautions is an impossible dream and that we can never hope to attain to such a standard of excellence. I will therefore refer them to a few statistics which should disabuse their minds of what is probably a fixed delusion in too many of the producers of our common market milk in this country.

In the State of New York, Certified Milk is produced under the direction and inspection of the Medical Milk Commission, appointed by the County Medical Societies. In this State there are 28 Certified Farms, and during the year 1910, an effort was made by the Department of Agriculture in Albany, N.Y., to get an expression of opinion from the

producer. The information received has been published in Bulletin No. 18 in detail, a summary of which presents certain points, which are of much interest.

It will be found that the average daily output is 562 quarts, varying from 60 to 4,100. The market may be as far as 287 miles away. The cost of stables and dairy averages \$13,000, varying from \$67,000 to \$500. Feeding in all cases with special diet for each animal, night watchman or night nurses for the cows are highly recommended wherever they are used. The average price from producer to consumer was 11.4c., and from producer to dealer 7.8c.

Fine buildings and equipment count for much, but of greater importance is the way in which the work is carried out. They recognize that success of the clean milk agitation depends on two things: (1) The ability and willingness of producers to inaugurate sanitary improvements. (2) The disposition of the public to pay a reasonable price for these more advanced methods and higher skill required. They affirm that the producers are more willing to produce than the public to pay.

New England and other States of the Union, with their increasing number of abandoned farms, have given us a warning with some attention. The better blood in many cases has gone off to the cities, and these in turn become loudest in denouncing the desertion. Does farming pay, and if not why not? A great deal has been done by the Ontario and other Governments in an effort to instruct those willing to learn improved methods in various branches, and a few are quickly learning lessons from modern business system. If it costs more to produce clean milk why should we not be willing to pay the bill. No farmer need fear that milk will go out of fashion, for it has been a necessity since prehistoric times. Man, of all the animals, had a forethought to provide a supplementary supply of milk, and had this plan of filching milk not been thus established there would

be no milk problem to-day. In the report of the Milk Commission of the Ontario Government last year, special mention was made of the Tully farms, near Syracuse, N.Y., and I take the liberty of reading an extract in part from this report. "It may as well be understood in the first place that the Tully farms are owned by a wealthy manufacturing company, the Solvay Process. Only requiring a small portion of this for their business; the owners were induced to go into the dairy business and they did so on broad general plans. Here cleanliness has been reduced to a science, if not a fastidiousness." The report then outlines in detail the plan of operations similar to that referred to previously. A close watch of the herd and its environment kept by a skilled veterinary, and samples of milk from every milking go to the laboratory for tests. A perusal of this report will show that the methods here observed made a strong impression on this Commission of Laymen. We hope that the Government will in the future bring down a most radical measure effecting this problem.

INFANTS' MILK DEPOTS.

Closely associated with work done by the Milk Commissions is the organization of infant milk depots, and in fact in most places, as in Hamilton, the interest in this latter has stimulated the work of the former.

The following figures show the great necessity for the present world-wide interest in this problem.

These places loose before the age of five years, the percentage of their births as here shown:—

New South Wales, 20%.

Norway, 24%.

Sweden, 28.8%.

England and Wales, 29.5%.

France, 30.0%.

Belgium, 30.1%.

Switzerland, 31.14%.

Prussia, 33.5%.

Italy, 44.5%.

Austria, 46.8%.

Spain, 50.0%.

China—In a certain annual report the Health Officer for Hong Kong showed that only 72 out of 1,000 lived to be a year old.

Collected and tabulated information has been received from some 28 cities in the U. S. A., in which are located these depots, and appear in concise form in No. 50 U. S. Government report. In the majority of these definite educational measures are carried out by means of literature, public lectures, addresses in churches, consultations at the dispensaries, and in addition to this there is the dissemination of information regarding infant hygiene by the house to house visitation of nurses. Some effort is made by the proper instructions of the mother to induce her to suckle her own child. Of these depots some sell the milk at a low price, others sell and give to those unable to pay. On the whole it is clearly a better policy to make some charge, thereby removing the element of charity and enabling the agency to do a greater work.

The majority carry on this work winter and summer alike. In nearly all a large percentage of children are ill when first applying for milk.

MORTALITY TABLE FROM THE MILK DEPOT REPORT.

RATE IN LOCALITY	RATE IN DISPENSARY
(Under one year.)	(Fed over one month)
(1) 3.5 per 1000	6 deaths in 1909
(2) 15 per 1000	11 out of 400
(3) 11.2 per cent.	2.5 per cent
(4) 20 per cent.	8 per cent.
(5) 13.04 per cent.	1.40 per cent.
(6) 15 per cent.	6 per cent.
(7) 15 per cent.	284 children.
(8) Total deaths 1424	203 " 11 died.
(Under 1 year 461)	90 " 2 "
(9) 10 per cent.	2.7 per cent.

PASTEURIZATION.

The question of Pasteurization has been pretty generally before the public during the past two or three years. Newspaper articles are often misleading and the minds of the people have been led to favor or oppose Pasteurization largely through popular articles in the press, and perhaps more frequently by the advertisements of dairies which either point out the value or a danger from this "cooked milk."

The question is not unsettled in the public minds alone and the subject is one which has caused division in the profession and in the scientific world.

Let us briefly consider then both sides of the question and arguments advanced.

ADVANTAGES CLAIMED FOR PASTEURIZED MILK

1. Protection of infection with diseases usually transmitted by milk.

2. Reduction of number of bacteria and consequently of infant death rate.

Park says: "After five years of effort to discover some relation between special varieties of bacteria and the health of children, we have been unable to prove such relation. It seems, therefore, that the number rather than species are concerned."

3. The enhancing of keeping qualities of the milk.

OBJECTIONS RAISED

1. Milk commercially Pasteurized and subsequently kept free from lactic acid bacilli will not sour, but will putrify.

2. Pasteurization of dirty milk does not eliminate toxins.

3. Carelessness after Pasteurization may result in serious contamination.

4. Pasteurization of milk may cover up or disguise dirty milk.

5. Milk not sold may be Pasteurized again.
 6. Bacteria may increase more rapidly than in raw milk.

7. Undesirable changes may be produced by heating, which result in making the milk less digestible, and particularly in case of infants.

REPLY TO OBJECTIONS

1. If the "holder" process is used and milk held at 145 deg. for 30 minutes, this will afford ample protection against pathogenic forms, and yet will leave in the milk some lactic acid bacilli. Holder 150 deg. 30 min. Flash 158 deg. 40 sec.

2. Experimental work shows that if Pasteurized milk be compared with clean raw milk of same count, the rate of increase is approximately the same.

3. Expert chemists tell us that little, if any, damage is done to the ferments or enzymes if they are not subjected to a temperature exceeding 150 degrees. It is hardly possible that in the process of digestion that even the proteids of cows milk, or any part of them, become assimilated without being first broken up and the proteid formula being again built up according to the needs of the human body. Few of us care to eat raw beefsteak, or, in fact, of any other animal proteid. Why, then, should we not have to cook milk.

4. The "holder" process is more effectual than the flash process. (Holder 150 deg. for 30 min. Flash 158 deg. or higher for 40 sec.)

Comparative number of bacteria in raw milk in cans from creameries and in milk after treatment by momentary and by holding process of treatment:—

Cans from Creameries.	Bottles from Flash or Momentary Process.	Bottles from Holding Process.
320,000	50,000	1,500
10,000,000	35,000	1,600
1,670,000	52,000	1,100
940,000	30,000	4,500
360,000	48,000	4,000
330,000	30,000	2,400
Average 2,270,000	40,833	2,518

5. Pasteurized milk must be sold in bottles and not as "loose" store milk.

7. Municipal or Government control should prevent fraud as cited above.

Striking demonstrations by Nathan Straus, the New York philanthropist, of the efficacy of his method of saving babies' lives, have aroused great interest at the German Imperial Health Office in Berlin.

In Sandhausen, near Heidelberg, Mr. Straus established an infant milk depot and began supplying Pasteurized milk in February, 1908. There was an immediate reduction in the death rate. At the end of the first year it was found that the mortality among children under two years old had been reduced from an average of 46 per cent. for the preceding five years to less than 20 per cent.

Last spring when Mr. Straus went to Germany for a vacation, he extended the work of his Sandhausen depot so as to supply Pasteurized milk to all the babies of the village, either by selling it at a nominal rate or by giving it away. The result was that there were no deaths of babies in Sandhausen in July, the hottest month of the summer, although in past years there have been six or seven deaths in this month each year.

The record of a July without a single death of a child under two years old has been obtained without any other change in the conditions of the babies than the supplying of Pasteurized milk instead of raw milk.

Another work instituted by Mr. Strauss has attracted the attention of the Health Office. At Karlsruhe he presented a Pasteurization plant to the Baden Women's Society, and it has been operated under the patronage of the Dowager Grand Duchess.

In Berlin the death rate among babies was from 26 to 27 per cent. prior to the inauguration of this work. About one-fifth of the babies of the city have been supplied with the Pasteurized milk since 1908, and the death rate has fallen to between 16 and 17 per cent., while among the

babies supplied with this milk the death rate has been less than 7 per cent.

These children are of the very poorest classes, among whom the death rate is usually highest, so it is regarded as especially remarkable that Pasteurization of the milk given to them should reduce the mortality among them to about one-third the average death rate of babies in the entire city.

One result of these demonstrations has been that Dr. Keller, who opposed Mr. Strauss' work two years ago, has decided to use Pasteurization in thirty-two milk depots that are to be opened in various cities of Germany under the auspices of the Imperial Government.

In Washington, no milk is allowed within the building occupied by the Department of Agriculture unless it is certified, Pasteurized, or from Tuberculin tested cows. More than a hundred gallons of milk is delivered daily to employees for luncheon.

When you take these facts into consideration and realize that 150 deg. F. is not very hot, about the temperature we drink tea and coffee, you will probably agree that the possible danger of damage to the milk by Pasteurization has been much exaggerated.

CONCLUSION.

What, then, is the attitude of the Commissions toward this problem.

1. "Certified Milk" should be available for infant and special feeding.

2. Efficient Pasteurization, under proper inspection and control, will eliminate many dangers and supply a safe food for general use. This is probably necessary for many years, until public opinion demands and is willing to pay for the highest grade.

3. In the absence of proper control of Pasteurization the public should demand a guarantee from the Board of Health that any so-called "Inspected Milk" comes up to a reasonable standard of cleanliness.

"Certified Milk" in any community, in the light of our present knowledge, is not only absolutely necessary from the standpoint of infant feeding, but the educational influence and its effect on the general milk supply is far-reaching.

The problem in New York is being faced on even a wider scale and the New York Milk Committee (a development of the Milk Commission idea), unites in its field of activities in addition to those cited above. Standing Committees representing the Production, the Consumer, Milk Dealers, also on Infant Mortality, Social Relations, Legislature, Publicity, and Ways and Means.

It is hoped that every effort will be made to induce the public to support, by private philanthropy assisted by municipal grant, the good work begun by the Victorian Order of Nurses, in order that the poor shall have within their reach a safe food for feeding both the sick and well babies during the summer months.

Until we get efficient Government regulation of this great problem we must leave the general public to help in bringing about gradually this ideal method.

Each member of the Society present can do their share. Insist that whoever peddles this "white food" and delivers the same to your home must observe reasonable cleanliness. Drive out and watch for yourself the process of milking. Make the producer understand that your patronage depends on these features, and in this manner you can make it worth while for the clean producer to keep up his standard as close as possible to the highest ideals.

At the close of the address several gentlemen spoke in support of those objects so fully set forth by the lecturer,

and said that as citizens they would unite in lending every possible assistance in the furtherance of the good work. The lecture was illustrated with over 100 views.

A vote of thanks was proposed by the Rev. R. E. M. Brady, and seconded by F. C. Grist, and carried unanimously.

The president, in tendering the vote, said that he hoped that the fullest possible publicity would be given to the address delivered by Dr. Mullin, as so much he had said was vital to the public good.

Dr. Mullin replied to the vote of thanks.

Meeting then adjourned.

Eighth Meeting, Friday Evening, January 20th, 1911

Lyman Lee, B.A., President, in the chair.

Present, the Executive Council and an audience that overtaxed the seating capacity of the hall.

Minutes of previous meeting read and confirmed.

Mr. W. A. Child, Corresponding Secretary, made announcements in respect to future lectures, and stated that he hoped that the Council would soon be able to obtain a larger and more suitable lecture hall.

The President then introduced Professor A. P. Coleman, Esq., M.A., Ph.D., of the University of Toronto.

Professor Coleman, in proceeding, stated that he was pleased to be again with friends in Hamilton, and said some kind things relative to the Hamilton Association, and proceeded with the subject.

Through South Africa from Cape Town to Victoria Falls, was the subject of the address, which was illustrated with limelight views. The gold mines of Johannesburg and the diamond mines of Kimberly and Pretoria were shown. The speaker explained the working of the mines and described their valuable products at some length. Pictures of the graves containing the bodies of the Canadian soldiers who died in the South African war were shown, as was also Cecil Rhodes' grave, which is situated on a lonely hill in Rhodesia. The views of Victoria Falls were magnificent. The speaker stated that he did not like to make a comparison between Niagara Falls and Victoria Falls, for they both had their own features, which were not similar. Volume of water at Victoria Falls, one-third of Niagara, but far wider and higher. No single view could be obtained in

one picture of the African falls, and the views were from different pictures.

The lecture was illustrated with about 100 views of exceptional merit.

At the close the audience showed their appreciation by liberally applauding Professor Coleman.

Mr. W. A. Child and Mr. Johnstone presented a motion thanking Professor Coleman for his most interesting address, which was suitably acknowledged.

Meeting then adjourned.

Ninth Meeting, Friday Evening, February 3rd, 1911

Lyman Lee, B.A., President, in the chair.

Present, the Executive Council and an audience of over 100.

Minutes of previous meeting confirmed.

Two applications were presented and passed on to next meeting for election.

The business being completed, Mr. J. F. Ballard, Vice-President, took the chair, and in a few well-chosen words introduced the President, Mr. Lyman Lee, B.A., as the lecturer of the evening, his subject being British India.

In his paper, Mr. Lee dealt at some length with the topography of the country and gave an interesting and instructive description of the various states and provinces. He stated that the portion under British rule covered about 1,835,000 square miles and had a population of about 294,000,000, or about a fifth of mankind. This, he said, was equal in population and area to Europe, with the exception of Russia. A brief review of what had been done for the country by British rule was given and the speaker pointed out that as in all other places, with the exception of one incident on this continent, about 125 years ago, it had proved beneficial. He told of the progress made in the country by the introduction of industries and irrigation, which had done much to lessen the famines which had in ages past devastated the country.

Mr. Lee dealt interestingly with the people of the country and told of their customs and habits, and their peculiar characteristics.

At the close of the lecture several gentlemen spoke at length on the many interesting facts set out in detail by Mr. Lee, and the lucid description of the picturesqueness of a wonderful country, the character and habits of the peoples of the Indian Empire were as beautifully displayed as were the "Flora and the great temples," and the boundless riches that everywhere abound.

That Mr. Lee had given all present an intellectual treat all agreed.

Mr. W. A. Robinson and Mr. McLaughlin moved a vote of thanks, which was duly presented and acknowledged.

Meeting then adjourned.

Eleventh Meeting, Friday Evening, March 3rd, 1911

Lyman Lee, B.A., President, in the chair.

Present, the Executive Council and a large audience.

Minutes of previous meeting read and confirmed.

Three propositions for membership were presented and passed on to next meeting for election.

Mr. Lee reported that favorable arrangements had been made whereby the Council hoped to secure a large room for lecture purposes and additional rooms for the museum, and stated in detail the terms.

It was duly moved and seconded that the action of the Council be approved, and that they be empowered to complete the transaction.

The President then introduced the Rev. John Morton, whose subject was

SCIENCE IN RELATION TO THE HIGHER ISSUES OF LIFE.

The end of human endeavor is life: more life and fuller. These boys at their marbles, knees and knuckles on the ground, are drawn there, and held, by the life that is in the game. The thirst for a draught of life takes the reader to his book, the musician to his music, and the pious to his meditation. R. J. Campbell, of the City Temple, London, offended many good people by saying that the drunkard goes to his cups in quest of life; but, though they needed qualification, there was insight in the words. For the instant the drunkard is carried out of his misery by the thrill of the coming moment when, at the taste of the liquor, he

will rise victorious over all the ills of life. There is an impulse in life to seek more life. The youth's dreams of riding out into some wild country to deliver a captive maiden, are the scouts of his life preparing for the time when he will, not in dreams, but in real life, do heroic deeds. Now, since life seeks a larger life, it is of interest to know what helps it, and what hinders it in the quest. We are ever increasing in this knowledge. To-day we know better what affects life for good or evil, than in any past age. And our question here is: how does science affect life in its scope, its character, and its humanitarian achievements?

Our subject, it will be seen, is practical. I have, in my present inquiry, no concern with the question whether there is in matter the promise and potency of all terrestrial life. Neither shall I discuss whether the atom, the ion, or the vortex in omnipresent ether, is the final explanation of the physical cosmos. Nor have I here any particular interest in the question whether the protoplasmic cell is a sufficient account of the energy of cosmic life, either in its vegetable, animal or human form. I do not question the value of these hypotheses as methods of measurement in their own sphere, but, I may say in passing, it seems to me they utterly break down as explanations of the cosmic life which reveals itself in the conscious experience of each human life. What is before me is the action of living science: science as it lives in the living man, and by which the blacksmith cunningly hammers a piece of iron into a well-fitting horse shoe. It was said in Scotland, in my young days, of the man who could strongly, and at the same time rhythmically, swing the scythe in the hay field, that he had the "art o't," or, better still, it was said "that he had it in him." He had not merely the idea of mowing: the idea had transmitted itself into instinctive action. And in these days of applied science the transforming of mere knowledge into instinctive knowledge has increased beyond computation. At first it is an intellectual scheme, at last it is an impulse to act, alert with all the energy of life. It

is science alive in every fibre of the man's being. Our question is: Does such science, either in its pursuit or in its achievement, help or hurt life—individual and social?

We do not need to be reminded of the conveniences, comforts and enlargements with which science has enriched us on the material side of life. True, there is a contra account. Its street cars are noisy, and grate on the ear; its telephones disturb the evening or after dinner nap, of the overworked merchant; its instruments of vocal and olfactory torture, do not induce pleasing sensations; and its startling horn at the street crossing strikes terror. This is no exaggeration. I was told the other day, by an artist who has a true eye for the expression of faces, that he has observed on the face of every chauffer, when running on high gear, the stamp of eternity. Be that as it may: despite these and all other ills of life which have come in the wake of science, we love it still, and count it one of the great factors in the material development of modern civilization. In view of this any panegyric of its material value would be a work of supererogation.

I.

But what of its impress on the higher things of life? Is there not a feeling in some quarters that modern scientific studies and pursuits, fruit-bearing though they be in the material side, have a tendency to breed a sort of moral tussock moth which feeds on the leaves and fruit of the tree of life. Few, indeed, would say, with the monk of the middle ages, that "knowledge is the mother of damnation." Most of us would give a hearty amen to the retort of one of the Apostles of the renaissance: "Ignorance is the mother of damnation." But while no one in these days would ban knowledge of the world in which we live, and which lives in us, we hear warnings of "secular education," and "Godless science." And it is beyond question that since knowledge is power, it may like any other power,

be used for evil purposes, as in the cases of murderous throwers of explosive missiles. A clever writer in a recent number of the *University Magazine*, laments, in a serio-comic way, that "the Devil is passing out of fashion," that "after a long and honorable career he has fallen into an ungrateful oblivion," and that "he now stands leaning on his three-pronged fork looking into the ashes of his smothering fire." His material Hell has been replaced by moral torture. And the writer goes on to ask how the laggards on the highway of virtue are to be kept advancing without the three-pronged fork. The writer's lurid parable suggests to me that science, with its usual enterprise, has sent abroad over the earth a new order of evil spirits who, if they are less weird, are even more effective in their deviltry. Sometimes one of these modern agents of evil appears in the form of a bank robber stalking about in shadowy corners of the street, with false keys in one pocket and his dynamite and fuse in another. Or he takes the shape of the Devil's attorney with his red bag under his arm and his head stuffed with scientific methods in law whereby he can make the worse appear the better reason. Or again, he may take the form of that famous pessimistic character of whom Job writes, who did not believe that there was a good man in the world, and who walked to and fro in the earth to find scientific evidence which would establish his want of faith in human nature.

To leave figure, science puts power into men's hands, and if they are evil men they will use it for evil purposes. But this is true not only of scientific power, but of power of any kind. A healthy hand may strike a cruel blow, and a healthy tongue may speak a venomous word. But in neither case do we blame the power, but the man who uses it. Neither must science be blamed for the horrors of well-thrown or well-laid bombs.

In like manner science must not be made responsible for a one-sided pursuit of it. Mere abstract ideas of life may so fill a student's mind as to exclude the rich contents

of life: the result being a kind of emotional paresis, the head getting due exercise and becoming agile, while the heart getting little stiffens and fails to perform its sympathetic function. In the University Magazine for February, 1910, there is an article on "A Laboratory Worker's Motive." This laboratory worker is an English physiologist living in London. He is, the writer tells us, an old man. He works to find out new things. When found he gives them to the world, returns to his searching, and for all hours of the day and most of the night. He has no wife, no family, no recreation save his work. Honors have been heaped upon him. Pretty ladies and distinguished ladies come to his laboratory to see and be honored in seeing the man. All have urged him to leave his workroom for a time and to enjoy with them the things that they enjoy, but he remains working alone. Sometimes his friends reproach him for his attitude. The answer of the old man is, I have been much alone, and sometimes the desire for comradeship has been almost overpowering and has caused me to question the wisdom of my ideals." The heroism and unselfish devotion of this old man we cannot but admire, yet surely his task could be performed without starving his heart. This confession of the impairment of the emotional side of life for the sake of the intellectual reminds me of the bantering remark of a friend of mine to a bunch of his medical friends with whom he was spending an evening. The talk turned to the superiority of the modern doctor over the doctor of bygone days. "The superiority," broke in my friend, "is not all on the side of the modern. When my grandmother's doctor came to her bedside in her sickness, he saw a human being and his heart went out to her. When my doctor, who belongs to the modern school of experts, comes to my bedside in my sickness, it seems to me that he sees, not a human being with thoughts which look before and after, but a piece of machinery, and that he puts a pair of keen, imperturbable eyes upon me that he may determine the extent of the mechanical

breakage." One of the medicos retorted, "If you were on your back with appendicitis, which would you choose, the old or the new doctor?" My friend deemed silence the safest answer. But his silence did not blunt the point of his criticism. It is beyond question that there is moral danger in the exclusive pursuit of abstract ideas of life. When we read of a German classical professor spending a lifetime in writing a treatise of many volumes on the Greek particle *de* it is time to call halt. Nevertheless, when all this has been said the evil is not in abstract science, but in the misuse of that form of science. It is not science, but a one-sided science that maims life.

As with science in the strict sense, so with secular education in our public schools. It may, in a school where the atmosphere of true education is wanting, become unhealthy. More attention may be paid to brawn and brain than to gentle manners and a generous heart. But I believe that even in the higher issues of life our national secular schools are superior to the schools of former days. Nelly McClung says of the Manitoba school readers that they are "noticeably silent in affairs of the heart." However this may be, our Ontario readers, in short extracts from poetry and history, are rich in records of heroic deeds and lofty ideals. These lessons in literature, given by teachers who enter through the letter into the spirit, introduce our boys and girls to the men and women of the past, who have embodied for us the moral qualities which have made Britain the inspirer of the world's highest life. More than this, no education is entirely secular. Even the knowledge of the world in which we live, and which lives in us, makes it impossible for us to forget that while we are in a well provided home, we are not at liberty to enjoy its privileges except in falling cheerfully in with its ways. Further, all true history and literature are alive with human experience, the knowledge of which cannot but bring wisdom to interested students. Still further, the teachers in our public schools in Canada come as a rule from our soundest and

sanest homes. They bring the mystic atmosphere of these homes with them into the school, and its cleansing power cannot be tabulated at any written examination. In view of this it appears that the fear of moral danger in secular education, as we have it in the public schools and institutions of Canada, is groundless, or at least exaggerated. The boy who knows something of the history of his country, and even a little of physiology, is equipped with a lamp that will help him to keep on the highway to the city of Life. That this may not appear without reason, I proceed to call attention to the pervasive, healthy and moral action of science on life; particularly to the action of that form of science which has developed its abstract ideas into instinct which, with eyes in its head, is ready to act at the call of the moment.

II.

We all know the ubiquity of scientific activity in modern life. Its fine, yet strong, fingers are at work in every throw of the shuttle in the web of life; not only in the coarser parts of the fabric, but also in the finer. We use its innumerable appliances, as we use our eyes, ears, hands and feet, hardly knowing that we use them. They are, so to speak, extensions, and multiplications of the organs of our body. By means of this enlarged bodily organism our reach is vastly increased; a reach undreamt of in the days when science was in its infancy. Familiarly we put the transmitter to our lips, and the receiver to our ear and converse with a friend miles away. By the Marconi device we send and receive messages of business and friendship across wide seas. In our homes, by means of a switch, we light the room, start a fire in the stove, and make toast on the table. The clothes we wear, the houses in which we live, the streets on which we walk, and the water we drink are all ours through science. And not only in domestic enlargement of our organism has science served us. We travel from Halifax to Vancouver in the comfort of a cush-

ioned chair. In a word, all our undertakings, from their inception to their completion, are put through by the aid of what may be called our multiplied physical organs. And so it has come about that the nocetic energy within our breast has an intrinsic relation to the volume of our life, individual, social, national and international.

Our dependence on this living science for our little comforts and conveniences, as well as for our great undertakings, has become a habit. Like breathing, this nocetic faculty is indispensable to our life, both on its lower and higher sides, and the progress of civilization is in proportion to its healthy activity. Man, as an individual, or as a race, depends on it from infancy. When a child on its mother's knee at the table, after a number of fumbling attempts, succeeds in picking up a spoon, and is able at pleasure to repeat the act, he has begun his education in practical science. He has discovered a connection between his will and the closing of his fingers, and is aware that he can repeat it. Given a healthy hand, and a spoon within his reach, the result is certain. Carlyle, in his *Sartor Resartus*, has a chapter on "Genesis." In it he tells of his hero as a babe, and describing the child's progress he says: "Meanwhile the incipient Diogenes, like others, all ignorant of his why, his how, or whereabouts, was opening his eyes to the light; sprawling out his ten fingers and toes; listening, tasting, feeling; in a word, by all his five senses, and still more by his sixth sense of hunger, and a whole infinitude of inward spiritual, half-awakened senses, endeavoring to acquire for himself some knowledge of this strange universe where he had arrived, be his task therein what it might. Infinite was his progress; thus in some fifteen months, he could perform the miracle of—speech! To breed a fresh soul. Is it not like brooding a fresh celestial egg; wherein as yet all is formless, powerless; yet by degrees organic fibres shoot through the watery albumen; and out of vague sensation grows thought, grows fantasy and force, and we have philosophies, dynasties, nay poetries and religions."

This infinite progress of Diogenes is Carlyle's epitome of the progress of the race. From vague sensations, and the sprawling out of fingers and toes, humanity has come by the way of thought, fantasy, and force, to dynasties, poetries and religion. Thus according to Carlyle, the life of the race began as a jubbling flux of sensations; the fingers and toes sprawling out without definite intent. But in this jubbling flux of atomic sensations there came a time when "thought" awoke. Life, augmented by thought, or knowledge, foresaw other ends, compared them with the mere flux, judged them to be of a higher order. Foreseeing them it sought them. And life's foresight has been revealing and pursuing higher and higher forms of life till we have reached the civilization of the twentieth century; nor has the revelation ceased, for is there not in our fantasy, on the way to become a fact, the feeling of international good will. It seems to be the case, therefore, that the knowledge, or science, of life's involuntary flux, and of how to train it to higher ends, is a vital and creative factor in the progressive well-being of the race, both in its lower and higher issues. True, as we shall show, knowledge is not sovereign in the kingdom of life. It is, nevertheless, the chief minister of the kingdom, guiding the clashing units to a larger union in which the highest good of each is found in the highest good of all.

III.

It appears, therefore, from what has been said, that, while knowledge of the world in which we live, has, like every other power, its moral dangers, it is nevertheless, always safer than ignorance. It further appears that knowledge, particularly in its modern scientific form, is an indispensable equipment in the progress of civilization. Let me now point out the part it plays in the very highest things of human life.

The sages of every age have lifted science., i.e., prac-

tial knowledge, into a distinctive place in the economy of life. "My son," said the Hebrew father to his boy starting out to do his work in the world, "get wisdom, and with all thy getting get understanding." The chief apostle of our religion wrote to a too emotional group of disciples, "Add to your faith knowledge." And coming to our own time, I read, the other day, in one of our papers, of one of our Canadian women who had distinguished herself in humanitarian activity, that she had the vision of good works, with the knowledge of how to bring them about. Thus, ancient and modern sages have deeply felt that goodness, in order to be useful, must enter into partnership with knowledge of ways and means.

I am aware that knowledge is not the greatest thing in life. The greatest thing in life is love. Consider these two powers and their relation. At the fire of love is kindled "the divine passion," family affection, friendship, patriotism, and the glowing fire of the Christian religion. Love is queen. For her all things work: some of them in wrath, but even in their wrath they will be made to serve her beneficent end. But true love is not blind. She has the eyes of practical knowledge, by which she sees the road to her destination. She sees after that she may see before. She sees yesterday that she may see to-morrow. She knows what has been that she may know what is to be. In a word, she carries with her the lamp of past experience to guide her feet on the way to the capital of the Kingdom of Life.

Love without the eyes of knowledge is a dangerous thing. Blind love of a woman led to the tragedy of Samson. Blind love of country led to the horrors of the French revolution. Blind love of nationality ended in the fiasco of the Riel rebellion. Blind love of religion led to the public execution of Him who has been the inspiration of all that has been, and is, best in our modern civilization. So then it is not blind love that wears the crown in the kingdom of true life. It is love with wide seeing eyes. In other words

it is love, vitally allied to knowledge, which is to deliver man from his sins and sorrows.

Not only is ignorant love a dangerous thing, it is also a helpless thing. It wells over with good wishes. But mere good wishes, while having a sympathetic value, are often practically helpless. A well-known proverb runs thus: "If wishes were horses beggars would ride." Good wishes are no exception. The wish that the poor may be fed and warmed does not of itself stock the larder or fill the bunkers with anthracite coal. Good intentions, in order to attain their end, need to have the practical knowledge of ways and means. In other words, if our generous impulses for the welfare of the home in which we live do not add to themselves intellectual and well-considered action—action which knows the nature of the situation—they will remain but pious wishes which will be little better than the efforts of a winged bird on the dusty road trying to fly. It "tries to soar, but only agitates the dust the more."

But let us not be unfair to the spirit of good will. There is more in it than the wish to help. There is in it, also, an eager urgency to find the way to help. Wherever there is a profound sensibility to a cry from a human heart, there are visions of usefulness "and visions are the creators and feeders of the world." Florence Nightingale, in her early years, was moved by sympathy to visit the sick in the humble homes in her own neighborhood. Having had no experience as a nurse she often felt helpless. This led her to take a course of training in a local hospital. Thus equipped with all the modern methods of caring for the afflicted, she was furnished, when the call came, to do her great work for the wounded and sick soldiers during the Crimean war. Her warm heart and trained skill made her efficient; illustrating Carlyle's words, "Love is ever the beginning of knowledge, as fire is of light." The heat of love and the light of knowledge work together. Between the apostle of heat, and the apostle of light,; that is, between the inspirational and the educational preachers there must be no

jealousy; no disparagement of the one at the expense of the other. Yet this is not always the case. Sometimes we hear the inspirationalist saying: "The perfection of life is to be found in a change of heart and not by a change of head." The stand thus taken is sound in its affirmation, for without the disposition to raise the level of life no effort to raise it will be put forth. But while the affirmation is indisputable, the negative is not only open to question, it is, on the face of it, untrue, as the whole history of human progress proves. The spirit of good-will, which is the dynamic of the Christian religion, has been constraining us to heal the sick, relieve the poor, deal gently with the erring, and to secure a more equitable distribution of the proceeds of labor. But often, in the past, it was helpless in the presence of these evils on account of the causes and the cures not being discovered. The will to heal the sores of our own economic conditions was present, but how to perform we knew not. We needed to have added to our good-will knowledge—such knowledge as comes from a study of the natural causes and cures of human ills. In a word the willing mind, in the kitchen, in the workshop, in the sick room and in governing a city or a country is indispensable; but it requires in each case to know how it is to be done. The two must go together. "Mere goodness, that knows not how to help, is not enough." Some people, says an Italian paradox, "are so good that they are no good." And an eminent Scotch divine has said, "Godless science may be a very poor thing, but ignorant piety, so far as any visible help to the world is concerned, is little better." And this is becoming clear to the leaders of the Christian movements.

Let me offer a few illustrations of this. And first observe that science has taught us the way to the truth of nature. It has been the training school in method. To be particular, it has shown us the method of arriving at the truth about the world in which we live, and through which we realize ourselves. True, science did not create the de-

sire for knowledge. The impulse to know is native to man. On a lonely country road you see a man in a field at a distance, doing something. You slower your pace and put your eyes steadily upon him for an instant. You want to know what he is doing, how he is doing it, and the end he has in view in doing it. Now, there is a right and a wrong method of arriving at this and all other truth; and modern science has delivered us from the false, and instructed us in the true way. In the pursuit of truth it is open eyed, and observant. It takes nothing for granted, but feeling and seeing for itself, with note book in its hand, it carefully sets down what it sees, hears and feels, that it may, in the study, under the lamp of thought, compare, classify and verify. The sprit de core of his order is a sense for facts. If a member of the order imagines that he has been at the North Pole, though he never was there; or says he was there though he was not, he will be stripped of his buttons. I know that some theologians call attention to the conflicting findings of scientists, and point out that their theories, like Kilkenny cats, eat one another up. But this does not cast down science from its pedestal as a school of intellectual veracity. If so, theological science must suffer the same humiliation, for it is as open to the charge of internecine war as physical science, and that to a greater degree, for disputing theologians have burnt each other at the stake, and I have not heard of opposing scientists going so far. They devour one another's theories, but not one another. But "you too" is no answer. The true reply to this charge is that in searching after truth there are always guesses, or hypotheses, on the way to be tested and verified. Science, by its inductive method, relying on experience, has taught us to use our own eyes, and when this is impossible, to make sure of the clear and careful eyes of those in whom we trust. This way of reaching the truth has been practised, in principle, in all ages. Frances Bacon exalted it to a conscious method and made it the pillar of cloud by day and of fire by night in travel-

ling through the desert of nature's uncertainties to the hoped for land of truth. Thomas Arnold was one of the pioneers in popularizing this inductive method in the higher educational institutions of England. And it is said of him that, through it, he has changed the face of English education. And he did this, not by what he actually taught, but by insisting on the method. He said, in substance, to his students: "Your final question must not be: 'Is it so written in the British constitution, or in the thirty-nine articles, but is it true? Is it, when tested by all you know, bed rock fact, or a beam of basswood on a bog?'" This veracious spirit of Arnold is a characteristic of the true scientist everywhere. I remember Lord Kelvin, the scientific expert at the laying of the first Atlantic cable, preaching to us this gospel of science again and again, in the Natural Philosophy class, Glasgow University. "Do not," said he, "accept any law as finally settled till it can be verified at any time by any competent person."

Prof. Tyndall, I think it was, who on a memorable occasion lifted this method of science into distinction. At a meeting of the British Association for the Advancement of Science, he delivered the annual address. In the course of it, he let it be seen that he had accepted the doctrine of the evolution of man through the lower orders of life. In the discussion which followed a distinguished divine, a man of ability, and a brilliant speaker, delivered a philippic against what he called "the degrading doctrine of the descent of man from an ape"—I speak from memory—and wound up with a sentence to this effect. "Professor Tyndall traces his ancestry back to an ape. All I can say is, I do not envy his choice of an ancestor." Tyndall replied, and, after calmly answering his critics' objections, countered thus: "As to the lofty sneer at my choice of an ancestor, all I have to say is—the choice was not mine to make. But were I asked to choose for my ancestor a distinguished divine, who in the exercise of his high office had used his eloquence to defame the character and work of

men who had spent their lives in the pursuit of truth—if, I say, I were asked to choose between such a man and an ape, I would—I would—well, I will leave it to the audience to say which I would choose.”

The true man of science, to quote Tyndall's words, “spends his life in the arduous pursuit of truth.” Were I a sculptor and engaged to make a statue of Science, I would produce a figure, open faced, with searching and sympathetic eyes under an ample brow, the symbol of intellectual veracity.

Not only has science taught us the method of reaching the truth of the world in which we live, and through which we realize ourselves, it has put, and is putting, the method to noble use in the service of life. Let me mention some of its gifts:—

(a) To begin, scientific history has opened for us the door of its chamber and given us freedom of fellowship with all past generations. Before modern science came history was mere chronology, and unsifted rumors. But since the dawn of the scientific method, we are “saved from rumor's thousand tongues.” Not only has chronology been perfected, setting events in their true order; but, what is of far more importance, these events have been revealed in their relation of cause and effect. We are made aware, not only of a succession of events in the progress of nations, but we have unfolded to us their hidden connection. We see the racial, national, political and religious currents which flowed from Greece to Rome, and from Rome to Britain, the United States and Canada. And scientific history, by revealing the course of the river of civilization in the past, enables us, in some measure, to prophesy the direction in which it is to flow in the future. And thus we have the seer who tells us what it is to be. But he is the true fortune teller, for he knows that the sapling maples are a prophecy of the swaying branches of our great maple forests. In other words, he has learned the secret of the modern historical student; that “coming

time already waits unseen, yet definitely shaped, pre-determined, in time come."

One of the seers of last century, speaking of the men of historic insight, says that they "give an inside to things in the past." He taught us, too, that until we get into the secret of seeing the inside of things we live "a blind life within the brain." Satisfied with the letter of national history we are but wandering peddlers of empty boxes; dealers in old cases and barrels emptied of the juicy fruit brought from far. The mere letter of human history killeth, but the spirit of it is a creative, ideal energy never satisfied at any stage of its growth, but by its mystic power ever pushing onward, outward, and upward to new forms of strength and beauty. History so presented, arrived at by the "arduous pursuit of the inner truth of things," is our true guide. We see in it the forces which were working their way to a higher form of human society. We see also the mistakes that were made even by those who were leaders in the forward movement. Thus modern history becomes both an inspiration and a warning to those who see visions and dream dreams of the time that is coming out of the time that is past. Through it we are brought under the sway of

"The dead and sceptred sovrans
Who rule us from their urns."

(b) Think also of our aid from modern science in the healing art. In saving life, and relieving suffering, it has worked wonders, even in the last half century. Sir James Simpson, in the middle of last century, introduced chloroform into surgery. After his death a lady relative of his told an interesting story of this discovery. She was visiting at Sir James'. In the parlor she was sitting chatting with him one evening. In the course of the conversation he took a phial out of his pocket, held it up between his finger and thumb, called her attention to it, and said familiarly: "Jeanie, look at this phial. It contains something that will work a revolution in surgery, and save

untold suffering." Sir James had come to the knowledge of this truth by long and careful experiments. He was met by determined opposition, but he did not falter in his faith, and so it is written of him: "He fought the battle of chloroform as an anaesthetic and won. He thus added to the world's stock of surgical knowledge. In every hospital in the world to-day the new knowledge is in use, and by it untold pain is escaped, and untold lives are saved. And surely lessening pain and saving life are among the higher works of life; works, however, which prayer alone, or good-will alone, is powerless to perform. Simpson was a good man, but in this Christian achievement he had to add to his faith the scientific knowledge which comes alone from long and patient experiments.

Another illustration of what modern science has done for the divine art of healing is found in its discovery of pathological germs. My acquaintance with the history of these discoveries is not sufficient to enable me to point out in detail even the outstanding stages of its progress. I can only suggest. This I can best do by quoting a sentence or two from one who is able to speak with authority. I mean our own Dr. Osler. Speaking recently of the triumph of preventive medicine as the handmaid of the Christian impulse to save life, he said: "Preventive medicine was a blundering art till thirty or forty years ago, when it was made a science by the discovery of the causes of many of the serious epidemic diseases." It is principally in connection with the great plagues of the world that man's redemption of man may, in the future, be effected. The man is only just dead (Robert Koch) who gave to his fellow-man the control of cholera. And before our eyes to-day the most striking experiment ever made in sanitation is in progress. The digging of the Panama canal was acknowledged to be a question of the health of the workers. For four centuries the Isthmus had been a white man's grave. At one time, under French control, the mortality reached the appalling figures of 170 per thousand.

Under American control, and modern methods of prevention, "Month by month I got the reports which form the most interesting sanitary reading of the present day. Of more than fifty-four thousand employes the death rate per thousand for the month of March was less than 9 per cent, a lower per cent than in any city of the United Kingdom. All this has been brought about in great part by researches into the history of the parasites which produce malaria, and by the effective measures taken for their destruction. These splendid results in the art of healing will be acknowledged by all. But, it may be said that health is not the highest thing in life. To this I reply that health is the physical foundation of the highest qualities, whether in the life of the individual, the family, the state or the race. It has been noticed, and marked, that the sane mind is more likely to be found in a sound body. A healthy body is the soil in which to grow the finest crop of intellectual, moral and spiritual activity. Not always, I know, do health and good morals go together. But, while this is true, the fact remains that well-balanced thinking, and stable morals flourish best in the good ground of steady nerves. A wise man will not trust either his judgment or his temper when suffering from nervous depression, or wallowing in a quagmire of biliousness. The same is true of criminals. I believe it has been established that the majority of them are physically defective. "A sick man," said Dr. Johnson, with his usual over-emphasis, "is always a criminal." We need, therefore, the modern science not only for brawn and brain, but also for moral and spiritual insight and heroism.

And this leads me to notice our new attitude to what we call the criminal class. It is an attitude of discrimination and intelligent sympathy. In its present form it had its origin in John Howard, the inspired prison reformer, who visited all the prisons of Europe that he might discover and expose the foolish, cruel and ineffectual treatment of the imprisoned. If this new attitude has not

lessened our abhorrence of lawlessness, or led us to be less determined to eliminate it from society. But it has made us wiser in apportioning the blame, and in applying a remedy. Modern criminology has taught us that for his crime the criminal is not alone responsible. The baseness of his act it may not be possible for us to overstate, but the measure of his guilt only omniscience can estimate. The modern doctrine of heredity has revealed to us that there are treacherous currents, which play on his ship and finally cast him on the shoreless sands of despair. Knowing this, our feeling to the sinner is not so repellent. We have partaken of the sympathetic imagination of Daniel Deronda, one of George Eliot's characters, of whom she says: "No one was less likely to fall into evil ways than he, but he judged the sinner leniently because he had a wide and far-reaching backward vision of all the influences which had played upon him to make him what he was." Oliver Wendell Holmes says that there are ten men in every man, and that therefore he travels through life not in a private carriage, but in an omnibus. Deronda also would have listened with signs of approval to a remark I heard a friend of mine make. "I have both my father and my mother in me. If they would mix they would make good wine, but sometimes I am the one and sometimes the other, which makes my mood aleatory." Our sense of these treacherous currents in our lives has awakened an intelligent sympathy. This has led to a wiser method of dealing with the lawless. Up till the beginning of last century the prevailing method of dealing with them was penal. Remedial methods were little thought of, so far at least as the national conscience was concerned. But though the national soul had not yet the paternal desire to restore the wayward children, there were many humane citizens who felt that their duty to the criminal was not fully done when they had made him feel the lash of the law. They felt that a duty rested upon them to adopt measures to bring him back to the path of virtue. Hence John How-

ard's work, and all the efforts since which seek to lessen the penal, and increase the remedial. But these remedial efforts need to add to the humanitarian spirit a wide and detailed knowledge of the history of each criminal, and of the best methods of treating. This is being secured by the students of criminology.

(c) Still further, by the modern method of reaching the truth there has come to us a sense of the reliability of our world. It is our friend, not our enemy. The more we know of it the surer we are that it is for us and not against us, and that to fall in with its ways is for our highest good. Acquaintance with our world has frightened away the ghosts, and delivered us from the fear of witches, which were the terror of the world till the dawn of the day of science. Even his Satanic Majesty himself, as the clever writer in the *University Magazine*, to whom I have referred, tells us, is standing idle over his smouldering fire. No doubt scientific truth has revealed to us myriads of real foes in the shape of bacteria, but it has shown how to get rid of them by setting them at eating each other up. In many other respects it has taught us that what we took to be an enemy is a friend. The lightning before the days of science was looked on as a bolt from an angry God. Now, knowing the truth about it, we find that it is a means of adding immeasurably to the necessities, the elegancies, and the humanities of life. And the ocean which once divided peoples now unites them in social fellowship and commercial exchange. Long ago the seer believed that the world was "given to the children of men," and that they were to subdue it and rule over it." But modern science has got beyond mere belief. It knows. It knows that nature is a strong and steady partner in life if we treat it as a partner should be treated. Otherwise beware! But science is teaching us the true and kindly way of ruling nature. What our alliance with it has done is a marvel; what it will do no tongue can tell or dreamer dream. Science has thus brought to us a sense of security in our alliance with nature.

Our ally is reliable. It will work for our welfare if we deal with it honestly. Through its aid we can realize the great humanitarian ideals which well up from the fountain of our Christian life. Her ways to the uninstructed may be fickle as the restless sea, but to the modern mind they are ordered and sure. A Scotchman and his wife were paying their first visit to Edinburgh. Their home was in Blantyre, the birthplace of Livingstone, the great African missionary and explorer. Knowing that a speaking statue of him was in Princes Street Gardens they sought it out, came up to it, and standing, looking up in silent admiration to the strong yet kindly face that never turned aside from its goal, he was heard to say, partly to himself and partly to his wife, "There's na come an' gang there." So it can be said of nature. It creates in us a sense of assurance. We trust it, and in our moments of our deepest insight, we feel that our co-worker is our other self. "For nature with man left out is not nature, but a fragment of her real self—a fragment, too, that leaves the highest unexpressed. But place man in nature and nature in man; let nature produce him and let him express her meaning and we have no longer the impossible task of deducing the living from the dead. 'Man throws fresh light on the processes which have brought him into being; explains each backward step in the circle and imprints his presence on all lifeless things.' " Thus man, as the interpreter and interpretation of nature, has progressed from one stage of civilization to another, and to-day he is more optimistic than ever. On the brave ship of humanity we sail over the ocean of time, looking ahead with questioning, yet hopeful eyes; growing in courage as we advance to the horizon which ever recedes before us. Does the voyage thus far tell us anything of the voyage beyond the line where the horizon dips out of sight? In other words, what of the progressive development of human life in the future? Particularly of man's most compelling and persistent hope—I mean the hope of immortality? Is it a reasonable hope? Does modern knowledge weaken or

confirm it? My time permits me only to suggest an answer.

The science of man, yet in its infancy, has made it clear that human life on earth has been, as we have seen, an intelligible, progressive development. From the time when each tribe was the enemy of every other tribe to the present age in which all enlightened peoples acknowledge all other peoples as having a common origin, living a common life, and looking with millions of eager and longing eyes into a common destiny. The race is gathering round the hearth of "humanity." This growing brotherhood, it would appear, has in its heart the ideal potency, and therefore the prophecy of infinite growth. And this being so it is reasonable to assume that the means of fulfillment will not be absent.

"Man thinks he was not made to die,

And Thou hast made him, Thou art just."

The hope of the continuance of life after the dissolution of the body is of keener interest than appears, for though often spoken of the speech rarely comes from the deeps. In the heart of us we cannot escape it. It springs up in us unbidden in the presence of man's mortality; and, when we miss from his usual haunts a life-long companion, we ask ourselves—for as a rule it is an inner monologue—is he alive? Does he know himself as the same person who, on this side of death, played with the boys on a certain playground; who loved, married, brought up his family, and did his part as a man of business, a neighbor, and a citizen? Now, if this hope were not crowned in experience it would long ago have ceased to sway its sceptre over the human heart. The persistent hope of immortality seems to suggest that human life needs it for completion, and cannot fulfil itself without it.

But hope to have validity must be supported by reason. Our feelings alone unsupported by reason give us no final assurance. Feelings are often no more enduring than houses of sand built on the shore and swept away by the next high tide. Many a cherished wish and forward gleam-

ing hope remains with us only as a pathetic memory. No, this compelling hope of immortality, to be secure, must have a more stable foundation than a pious feeling. It must rear its spire, running upward into the eternal sky, on a foundation in which feeling is reinforced by intelligence.

Let us then test the reasonableness of the hope by setting it over against its negation. Either the human family is immortal or it is not. Which of the two hypotheses is the more reasonable: that is, more in accordance with man's deepest and truest instincts? See first what is involved in the denial of immortality. Assume that a time will come when the human family has ceased to be. Our hopes and fears, our failures and successes, and our efforts after a higher civilization will have come to—nothingness. Is it reasonable to suppose that these self-sacrificing efforts are without any intelligible end? Is the end of man's labor under the sun to be lured, by these high visions of eternal service, to the brink of the precipice of extinction, and suddenly to fall down into the sullen waters of oblivion? If such is the end of humanity, what must we think of its creator? On this assumption human life on this side of death is meaningless. On the other hand, assume that the entire human family is here undergoing a training for the eternal career in another province of the eternal, and life here is reasonable and full of meaning.

There is thus in the passengers on the ship of humanity, as it forges ahead on the unknown sea, the lively and reasonable hope that it will not drift beyond the love and care of Him who rules the waves, and that it will reach the latitude where

“His islands lift their fronded palms in air.”

At the close of the lecture a hearty vote of thanks was tendered the Rev. Mr. Morton.

Several gentlemen spoke at length in review and in appreciation.

The meeting then adjourned.

Twelfth Meeting, Friday Evening, March 17th, 1911

Lyman Lee, B.A., President, in the chair.

Present—The Executive Council and an audience of over 125.

Minutes passed.

Business passed on to next meeting.

The President then introduced the lecturer of the evening, Professor J. Squair, M.A., of the University of Toronto. Subject, French Art.

Professor Squair, by the aid of a number of excellent lantern slides, presented the subject in a most instructive and entertaining manner. Taking first the Architectural Art, and then proceeding pointed out the development in the several branches of art through the centuries dividing them.

Past President J. L. Johnstone followed in review, expressing his deep sense of appreciation, and moved that the thanks of the Association be tendered Professor Squair.

H. B. Witton, Esq., seconded the motion, and in doing so expressed his pleasure. He said that so much could be learned by tracing the development of Art, and hoped that at some future time the Professor would favor the Association with a lecture on English Art.

The vote of thanks was duly tendered.

Meeting then adjourned.

Thirteenth Meeting, Friday Evening, April 17th, 1911

Lyman Lee, B.A., President, in the chair.

Present—The Executive Council and a large audience.

Minutes read and confirmed.

Proposition was presented.

On motion, duly moved and seconded, the rule was suspended and the applicant elected.

The President then called upon Past President Dr. S. A. Morgan, B.A., Ph.D., principal of the Normal School. Dr. Morgan took as his subject, The Nature and Origin of Knowledge, and introduced his subject with a reference to the well-known lines on knowledge, in Tennyson's In Memoriam. The lecturer developed the two opposing views commonly held in reference to the nature of knowledge—the one cultural, the other practical. Through simple illustrations it was shown by a comparison of biological, physiological and mental phases of adaptation, that the practical was the true theory as to the nature of knowledge, that the end of knowledge is practical, having to do with the guidance of conduct and the formation of character.

By considering the origin of the various phases of human knowledge in the light of evolution, it was shown that these phases had developed from the social needs of primitive man, and had gradually differentiated into the various sciences as man's experiences became more laden with meaning and his interests more complex. Thus, through the differentiation of the materials and processes of man's social environment, the ever-widening circle of knowledge is extended and subdivided.

The lecturer concluded with a reference to the relationship of art to knowledge, showing that in art, knowledge finds its full significance; since it is in his constructive activities that man socializes his knowledge to the fullest extent by applying it to social service. Through these activities, therefore, knowledge and skill promote social welfare and lead to the formation of character.

At the conclusion of the address, the president of the Association invited comments on the subject under debate, and some interesting observations followed. Among the speakers was A. Alexander, who told of the application of knowledge in plant life, and by way of illustrating his remarks told of his observations of a spruce tree which had been broken by the wind about twelve years ago, and how the horizontal branches gradually grew up to take the place of the part that had been destroyed. That, he said, was the adaptation of knowledge in plant life.

Before the meeting was brought to a close, a hearty vote of thanks was tendered to Dr. Morgan for his able address.

Fourteenth Meeting, Friday Evening, April 21st, 1911

Lyman Lee, B.A., President, in the chair.

Present—The Executive Council and over 100 members and friends. -

Minutes read and approved.

Proposition—Dr. Jas. Russell, Physician. Passed on to next meeting for election .

The President then referred to the sudden decease of Mr. J. F. Ballard, the esteemed ice-President.

The following resolution was then submitted:—

Moved by Dr. S. A. Morgan, and seconded by Mr. J. H. Smith:

Resolved, that whereas it has pleased the All-wise Ruler of the Universe to call to Himself our esteemed friend and fellow-laborer, Mr. John F. Ballard, thereby depriving this Association of the wise counsel and untiring services of a faithful member and officer;

Resolved, that we do hereby record our grateful acknowledgment of His services performed on behalf of this Association, and our deep sense of the loss sustained through his removal, both by the members of this Society and the youth of our city, to whose moral and intellectual welfare his talents were so unselfishly devoted, and be it further resolved, that a copy of this resolution be placed upon the minutes of the Association .

Dr. Morgan and Mr. Smith, in presenting the resolution, spoke at some length.

Dr. Morgan stated that he had been associated with the late gentleman in many ways for a number of years, and that he entertained the highest regard for him in respect to his unselfish interest on behalf of all those who looked to him not in vain for counsel and advice,

Mr. Smith stated that it had been his privilege to be associated with the late gentleman, who he regarded as a close personal friend. In his profession he was most capable and painstaking, persuing his duties with a characteristic cheerfulness which endeared him to the scholars.

In presenting the motion, the President also referred to the many marked qualities that distinguished the late Vice-President, and stated that as a member of the Board of Education he wished to pay due tribute to the late Mr. Ballard, and bore testimony to the esteem in which he was held by teachers and scholars alike.

The resolution was then duly passed by a silent standing vote.

The lecture by Professor Carruthers was indeed interesting. He was formerly a Hamilton man, and received his early education in the Hamilton Collegiate Institute. His subject, he stated, brought to his mind Homer, who was known as the dreamer of dreams. It was Homer who wrote about the ancient cities, and many on reading his descriptions thought that he did not know his subjects, but on this the speaker differed. He claimed that discoveries substantiated the stories that the cities of the Mycenaean civilization were as modern as those of to-day. The walls were as large and strong as those of the Tower of London, and the palaces were even larger than those of to-day. The garments and hats of the women of those days resembled those of to-day, and their pottery and silverware were as well finished as is that of modern times.

At the close of the lecture Dr. Jas. Russell moved, and Mr. G. L. Johnstone seconded, a vote of thanks to the lecturer.

Each gentleman spoke in the highest terms of the pleasure the lecture had afforded all present.

Professor Carruthers replied in a few very humorous words.

Meeting then adjourned.

Fifteenth Meeting, Friday Evening, May 5th, 1911

Lyman Lee, B.A., President, in the chair.

Present—The Executive officers. The night being stormy, the audience was not so large as on most previous meetings.

Minutes read and approved.

Dr. Jas. Russell was unanimously elected.

G. C. Martin, General Passenger Agent of the T., H. and B., and Rev. W. E. Gilroy, were duly proposed.

Mr. H. B. Witton spoke relative to an article contributed by Vice-President G. Parry Jenkins, F. R. A. S., on Reflecting Telescopes. Mr. Witton said that it was a valuable contribution to astronomical literature, and commended it to the members of the Association.

The President then introduced Professor A. H. Abbott, B.A., Ph.D., Toronto University, saying that Professor Abbott was a valued friend of the Hamilton Association, and that all present were delighted to have him lecture again on those subjects, of which he had such a masterly grasp.

In commencing his lecture, the professor said that he had no intention of attempting to answer the question which was his subject, What Does Man Know About the Universe? but he would simply deal with the question itself.

The question as to whether there should be philosophy in the world or not was debatable, said the speaker. Man was constantly coming in contact with a world he did not understand, and speaking in the complete sense the great

goal of philosophy was to get a conception of the world, or in other words, to understand the world as it actually was. To get into the form of thought a conception which would represent that philosophy adequately, it was necessary that the conception must be practical, or in other words, it must be true.

In attempting to solve the great problem man had proceeded in different ages from various standpoints. At one time philosophers emphasized the real, and sought to express it. At another time they asked about human knowledge and its conditions, and so on through the various ages various problems had been set by man in attempting to solve the problem of philosophy. Some of the problems were: Man as a mere organism, as a citizen, as a moral being, and as a religious being, while in the present age the question which was being considered was, man as a scientist. j

Such considerations, said the speaker, showed clearly how very complex the problem was, for the ultimate conception must include all of those. The professor then went on to deal with the history of philosophy. From the biological view, man was constantly changing, but from the mathematical point of view, man never changes, he said.

The speaker traced various problems, he said, to show that the world was constantly changing, and that new discoveries were being constantly made.

At the close of the lecture a very hearty vote of thanks was tendered to Prof. Abbott by the chairman, on behalf of all those present, and unanimously carried.

Report of Executive Committee

To the President and Members of the Hamilton Association:—

Your Executive Council respectfully submit the following for your consideration:—

1st, Membership—It is most important that there should be a steady influx of new members. From the general causes, removal from the city and inability to keep in touch with the Association, the result being that from time to time our membership list decreases.

While we have not been as successful in adding members to the Association as the year previous, there has been quite a satisfactory gain.

The following members were elected since the last Annual Meeting: James Johnson, W. H. Holcolm, W. H. Jenkins, John H. Potter, C. R. Thompson, W. H. McCulloch, Rudolf Janata, Thomas Jackson, Alfred Thomas Colville, B.A., Joseph Pim, A. T. Bratton, Rev. Felix Taylor, Albert E. Smith, S. A. Wait, Elizabeth Bagshaw, Thomas Sale, Gerald McKlin, Isabel Walton, Miss Mary Harris, James L. Jolley, H. C. Lannin, Rudolf Kraus, J. R. Russell, M.D., G. C. Martin, W. E. Gilroy, Harold H. Cummer.

Since last Annual Meeting, the Executive Council have assembled nine times for the transaction of general business.

Special attention has been given to the financial affairs. All claims upon the Association funds have been fully scrutinized.

In this respect we are pleased to note that all liabilities to date have been promptly met, and that as the

Treasurer's statement will show, a respectable balance remains.

For years the need for better accommodation, both in respect to space to properly display and preserve those features relative to the museum of the Association had been continually pressing upon the Executive.

The large increase in attendance at the lectures made it necessary also for a larger hall for lecture purposes.

Owing mainly to the efforts of the President, it was made possible for the Association to secure this much needed addition. The increased attendances at the lectures since our meeting in this room we think fully justifies our venture.

The expenses of moving the goods, etc., together with some alterations, electric wiring, etc., was considerable, but funds are available to meet these extra demands, which, when settled, will leave little for the future, so that in this respect your co-operation in matters of finance will be appreciated.

Lectures—At the beginning of the season a syllabus of lectures, together with a list of members, was distributed to all our members, and distributed at the several lectures, as occasion demanded.

By the kind efforts of Mr. W. A. Child, Corresponding Secretary, a series of lectures was provided which we feel has given general satisfaction.

We have as far as possible given notice to the entire membership, just prior to each lecture. With a membership of some 250 this means some little time. Some errors in the addresses have come to our notice. We feel that there are still some inaccuracies in our mailing list. We would be glad if the members would assist in making corrections.

Journal and Proceedings—Owing to the demands upon our limited funds, and with a view of placing our

finances in a more permanent position, your Executive decided to skip one year's publication, to curtail the matter for publication, and to embody the proceedings of two years in one number. That number was recently issued and distributed to the members, and all expenses in connection with the issue of this number has been paid.

You are now called upon to exercise an important function, that of electing your staff of officers for the management of the affairs of the Association for the next twelve months.

We desire to thank all those who have assisted us to carry on the good work of this most useful institution, and we trust the same very generous support will be given to our successors.

Respectfully submitted,

JAS. GADSBY,
For Executive.

Report of the Camera Section

Hamilton, May 19th, 1911.

To the President, Officers and Members of the Hamilton Association:—

The Camera Section has enjoyed a very successful year, with a varied and interesting programme, which has helped many of its members.

The summer months were chiefly occupied in a series of semi-monthly outings to points in the vicinity of Hamilton, interesting to the photographer. Idlewyld near Preston, Oaklands, Greensville, Bullock's Corners, Burlington, Fisher's Glen, Ancaster, Waterdown and Albion Mills were visited.

The Annual Print Exhibition was held the last week in October. One hundred and fifty prints were shown, and many possessed artistic merit. A few called forth the commendation of the judges, Messrs. Cunningham and Gordon, to whom the section is specially indebted.

During the winter months a series of demonstrations were held covering such subjects as after-treatment of the negative, Carbon and Gum Printing, Autochromes, Color Toning and making of Lantern Slides.

Also a series of Lantern Slides made by the 18 clubs comprising the American Lantern Slide Interchange were shown, and the meetings thrown open to the public. These were well attended and were very interesting.

About five years ago the Camera Section undertook to relieve the parent association of the expenses of maintaining a dark room, etc. This undertaking has

been a problem ever since and the abandonment of the present quarters is now under consideration on account of the very unsatisfactory condition of our finances. Fuller details of this condition will probably be presented to your Council during the coming season for their consideration and advice in the hope that we may receive material assistance.

Signed on behalf of the executive;

E. G. OVERHOLT,
President.

Curator's Report

Your Curator regrets to report that very few additions have been made to the Museum collection since his last report.

Several farmers in the neighborhood of the city promised to keep for us any Indian relics they may find, but as yet I have not received any specimens. Our Vice-President, G. Parry Jenkins, however, obtained, and placed in the case containing Indian Antiquities, a specimen of the Red-men's "fire stone," differing in shape from any I have seen.

Your Curator placed there a few implements which he got from Mr. G. F. Jeffrey, Caledonia.

He also put into the case holding the cretaceous fossils from England, presented to the City Museum by the late Mr. Gaviller, a small collection from the English Gault, which he received many years ago from Palestine explorer.

CHAS. COOTE GRANT,
Curator.

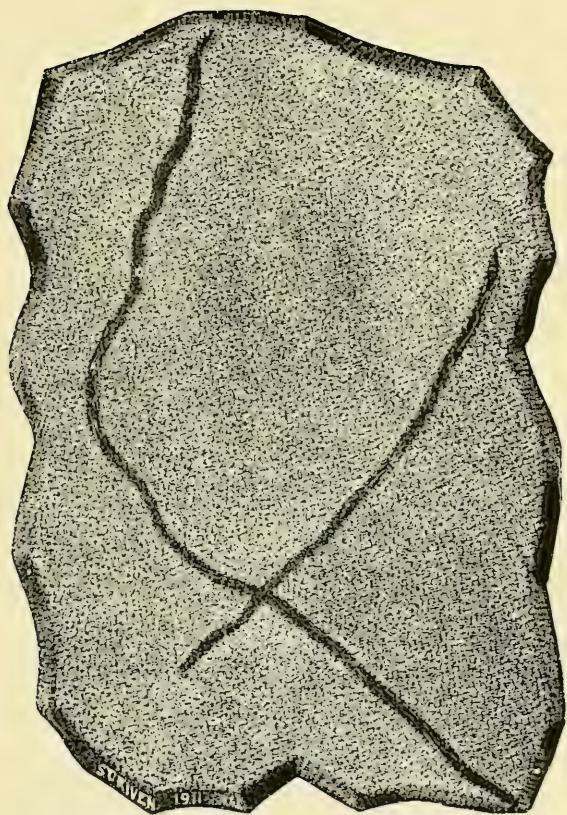
Geological Section

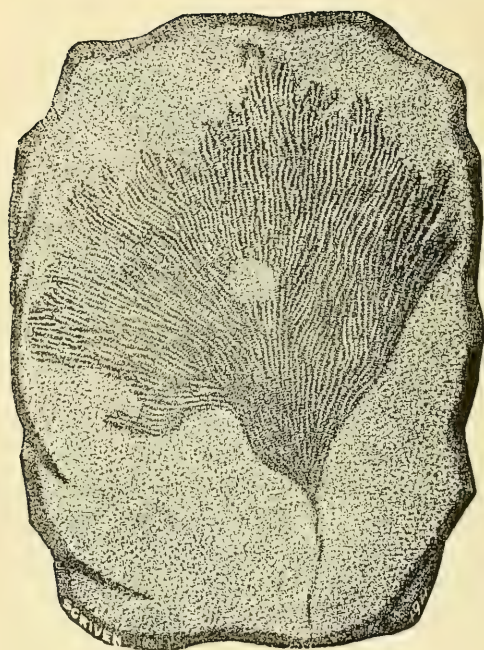
Since the death of the late President of the Geological Section, A. T. Neill, practically it has ceased to exist. It has had merely a few members at any time, and when these died off or removed from the city, no fresh members were forthcoming to replace them.

The writer can see no chance, unfortunately, for the present, for a revival of the section, while he feels satisfied we may have still much to learn here regarding the plants and fossils in our local silurian rocks. Where new specimens have been discovered of late years, after nearly half a century's exploration, who can imagine research is quite exhausted. We must not forget that many organii remains in former times were sent away from this and are yet unrepresented in our collection.

CHAS. COOTE GRANT,

Member Geological Section, Hamilton Association.





Honorary Members

- Grant, Lt.Col. C. C., 293 Bay Street South, Hamilton.
Macoun, John, M.A., Ottawa,
Fleming, Sanford, C.E., C.M.G., Ottawa.
Farmer, Wm., C.E., New York.
Small, H.B., Ottawa.
Dee, Robert, M.D., New York.
Keefer, Thos. C., C.E., C.M.G., Ottawa.
Burgess, T. J. W., M.D., F.D.S.C., Montreal.
Warner, W. R., F.R.A.S., Cleveland.
Carey, Mrs. S. E., Hamilton.
Maunder, E. W., F.R.A.S., Royal Observatory, Greenwich,
England.
Maunder, Mrs. A. S. D., London, England.
Grenfell, W. T., B.A., M.D., M.R.C.S., Steamship Strath-
cona, Labrador.
King, W. F., B.A., LL.D., Chief Astronomer of Canada,
Dominion Observatory, Ottawa.
Brashear, John A., Professor of Astronomy, Allegheny Uni-
versity.
Walker, Isabel M., Hamilton Association, Hamilton.
Alexander, A., F.S.Sc., Hamilton Association, Hamilton.
Witton, H. B., Esq., Hamilton Association, Hamilton.
Haeckel, Professor Ernst, Jena, Germany.

List of Exchanges

(1) Canada.

Royal Astronomical Society of Canada.....	Toronto
Canadian Institute.....	Toronto
Natural History Society of Toronto.....	Toronto
Department of Agriculture.....	Toronto
Library of the University.....	Toronto
Public Library.....	Toronto
Geological Survey of Canada.....	Ottawa
Ottawa Field Naturalists' Club.....	Ottawa
Ottawa Literary and Scientific Society.....	Ottawa
Royal Society of Canada.....	Ottawa
Department of Agriculture.....	Ottawa
Entomological Society.....	London
Kentville Naturalists' Club.....	Kentville, N.S.
Murchison Scientific Society.....	Belleville
Natural History Society.....	Montreal
Library of McGill University.....	Montreal
Nova Scotia Institute of Natural Science.....	Halifax
Literary and Historical Society of Quebec....	Quebec
L'Institut Canadian de Quebec.....	Quebec
Natural History Society of New Brunswick.....	St. John
Manitoba Historical and Scientific Society.....	Winnipeg
Guelph Scientific Association.....	Guelph
Queen's University.....	Kingston
Natural History Society.....	Niagara

(2) United States.

Kansas Academy of Science.....	Topeka, Kan.
Kansas University Quarterly.....	Lawrence, Kan

American Academy of Arts and Sciences....Boston, Mass.
Psyche..... Cambridge, Mass.
Library of Oberlin College.....Oberlin, Ohio
American Assoc. for the Advancement of Science
.....Salem, Mass.
Museum of Comparative Zoology.....Cambridge, Mass.
American Dialect Society..... Cambridge, Mass.
United States Department of Agriculture..... ..
.....Washington, D.C.
Biological Society of WashingtonWashington, D.C.
Philosophical Society of Washington....Washington, D.C.
Smithsonian Institute.....Washington, D.C.
United States Geological SurveyWashington, D.C.
American Society of Microscopists.....Buffalo, N.Y.
Buffalo Society of Natural Sciences.....Buffalo, N.Y.
California Academy of Sciences.....San Francisco, Cal.
California State Geological Society....San Francisco, Cal.
Santa Barbara Society of Natural History.....
.....San Francisco, Cal.
University of California.....Berkley, Cal.
Minnesota Academy of Natural Sciences.....
.....Minneapolis, Minn.
Academy Natural Sciences..... Philadelphia, Pa.
Academy of Sciences.....St. Louis, Mo.
Missouri Botanical Gardens.....St. Louis, Mo.
American Chemical Society New York City
New York Microscopical Society..... New York City
The Linnean Society New York City
American Astronomical Society..... New York City
American Geographical Society..... New York City
New York Academy of Science..... New York City
Terry Botanical Club..... New York City
Central Park Menagerie New York City
American Museum of Natural History.... New York City
Scientific Alliance..... New York City
Cornell Natural History Society Ithaca, N.Y.
John Hopkins University..... Baltimore, Md.

Kansas City Scientist.....Kansas City, Mo.
 Wisconsin Academy of Science, Arts and
 Letters.....Madison, Wis.
 Soc. of Alaskan Natural History and Ethnology
 Sitka, Alaska
 University of Penn.....Philadelphia, Pa.
 Franklin Institute.....Philadelphia, Pa.
 Brooklyn Institute of Arts and Science....Brooklyn, N.Y.
 War Department.....Washington, D.C.
 Field Columbian Museum.. ..Chicago, Ill.
 Academy of Sciences.....Chicago, Ill.
 Agricultural College.....Lansing, Mich.
 Colorado Scientific Society.....Denver, Col.
 Museum of Natural History.....Albany, N.Y.
 State Geologist.....Albany, N.Y.
 Rochester Academy of Sciences.....Indianapolis, Ind.
 Indiana Academy of Sciences.....Indianapolis, Ind.
 Davenport Academy of Natural Sciences..Davenport, Iowa
 Pasadena Academy of Sciences.....Pasadena, Cal.
 U. S. Board of Geographic Names.....Washington, D.C.
 Lloyd Library.....Cincinnati, Ohio
 Colorado College.....Colorado Springs
 Public Museum of the City of Milwaukee.....Milwaukee

(3) West Indies.

Institute of Jamaica.....Kingston, Jamaica

(4) South America.

The Royal Agricultural and Commercial Society of
 British Guiana.....Georgetown

II.—EUROPE.

(1) Great Britain and Ireland.
 England.

Bristol Naturalists' Society.....Clifton, Bristol
 British Naturalists' Club.....Bristol
 Literary and Philosophic Society of Leeds.....Leeds
 Conchological Society.....Manchester

Royal Society.....London
 Royal Colonial Institute.....London
 Society of Science, Literature and Art.....London
 Geological Society.....London
 Manchester Geological Society.....Manchester
 Mining Association and Institute of Cornwall...Camborne
 Cardiff Photographic Society.....Cardiff
 Owens College Conchological Society.....Manchester

Scotland.

Glasgow Geographical Society.....Glasgow
 Philosophical Society.....Glasgow

Ireland.

Royal Irish Academy.....Dublin
 Royal Geological Society of Ireland.....Dublin
 Naturalists' Field Club.....Belfast

(2) Austria-Hungary.

Anthropologische Gesellschaft.....Vienna
 K. K. Geologische Reichsanstalt.....Vienna
 Trementschin Scientific Society.....Trementschin

(3) Belgium.

Societe Geologique de Belgique.....Liege

(4) Denmark.

Societe Royal des Antiquaries du Nord.....Copenhagen

(5) France.

Academie Nationale des Sciences, Belles Lettres
 et Arts.....Bordeaux
 Academie Nationale Science, Art et Belles Lettres...Caen
 Academie des Nationale Science, Art et Belles
 Lettres.....Dijon
 Societe Geologique du Nord.....Lille
 Societe Geologique du France.....Paris

(6) Germany.

Naturwissenschaftlicher Verin.....Bremen
 Naturwissenschaftlicher Verein.....Carlsruhe

(7) Russia.

Comite Geologique.....	St. Petersburg
Russich-Kaiserliche Mineralogische Gesellschaft	
.....	St. Petersburg

III.—ASIA.

(1) India.

Asiatic Societies of Bombay and Ceylon.....	
Asiatic Society of Bengal.....	Calcutta
Geological Survey of India.....	Calcutta

(2) Straits Settlements.

The Straits Branch of the Royal Asiatic Society..	Singapore
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(3) Japan.

Asiatic Society of Japan.....	Tokio
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IV.—AFRICA.

(1) Cape Colony.

South African Philosophical Society.....	Capetown
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V.—AUSTRALIA.

(1) Australia.

The Australian Museum.....	Sydney
Royal Society of New South Wales.....	Sydney
Linnean Society of New South Wales.....	Sydney
Royal Anthropological Society of New South Wales	
.....	Sydney
Australian Natural History Museum.....	Melbourne
Public Library of Victoria.....	Melbourne
Royal Society of Queensland.....	Brisbane
Queensland Museum.....	Brisbane

(2) New Zealand.

New Zealand Institute.....	Wellington
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(3) Tasmania.

Royal Society of Tasmania.....	Hobartown
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List of Lectures

SEASON '1912-13

Feb. 17th—*“The Indians at the Head of the Lake.”

J. H. SMITH, ESQ.

Inspector of Schools, Wintworth County.

Feb. 21st—*“The Story of the Bible.”

PROF. J. F. McLAUGHLIN, M. A., Ph.D.

University of Toronto.

Mar. 7th—“Mechanical and Electrical Units.”

JAMES GILL, B. A., B. Paed.

Associate Inspector of City Schools.

Mar. 21st—*“Birds of Ontario.”

C. K. CLARK, M.D.

Superintendent of General Hospital, Toronto.

April 4th—“Modern Daedalus and Icarus.”

E. MORRISON, B.A.

The Collegiate Institute.

April 18th—*“The Trent Watershed.”

DEAN B. E. FERNOW, Ph.D.

University of Toronto.

May 2nd—“Instinct and Intelligence.”

PROF. A. H. ABBOTT, Ph.D.

May 16th—“Subject to be announced later.”

H. B. WITTON, ESQ.

* Illustrated by Lantern Slides.

Oct. 4th—"Public Health Machinery of Canada."

PROF. JOHN A. AMYOT, M.B.

Provincial Bacteriologist, University of Toronto.

Oct. 18th—"Prince Kropotkin, Scientist and Revolutionist"

REV. W. E. GILROY, B.A.

Nov. 1st—"Plant Adaptation."

W. H. ELLIOTT, B. A., Ph.B.

Inspector of Schools, Toronto.

Nov. 15th—"Mountain Building."

PROF. A. P. COLEMAN, Ph.D.

University of Toronto.

Dec. 6th—"Glimpses of Greece."

W. A. CHILD, Ph. B., M.A.

Dec. 20th—"Mineral Wealth of Ontario"

THOS. W. GIBSON, ESQ.

Deputy Minister of Mines.

Jan. 3rd—"The Cotton Industry."

JOHN VOADEN, B.A.

The Normal School, Hamilton.

Jan. 17th—"Cellulose."

PROF. F. B. ALLAN, Ph.D.

University of Toronto.

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